



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

CANADA

2/94



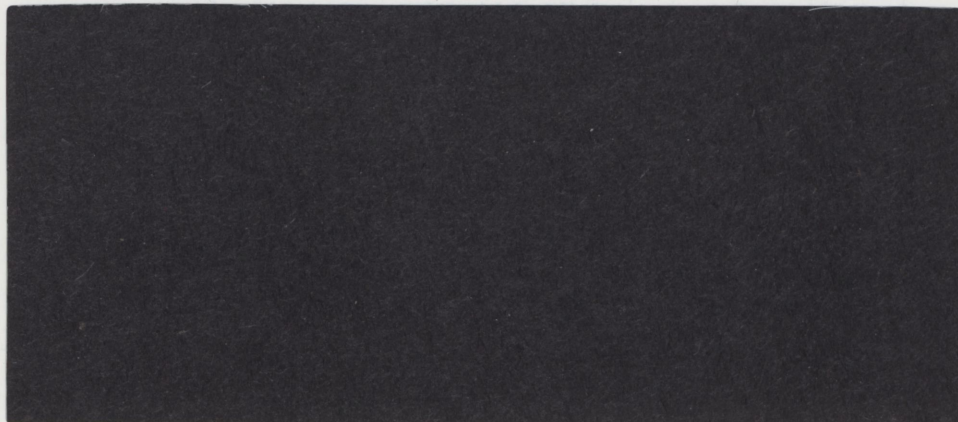
Agriculture
Canada

Policy
Branch

Direction générale
des politiques



LIBRARY
 WITHDRAWN
 MAR 1994
 GIANNINI FOUNDATION OF
 AGRICULTURAL ECONOMICS



Canada



Working papers are (1) interim reports completed by the staff of the Policy Branch, and (2) research reports completed under contract. The former reports have received limited review and are circulated for discussion and comment. Views expressed in these papers are those of the authors and do not necessarily represent those of Agriculture Canada.

**SOME INTERNATIONAL MARKET
DEVELOPMENTS AFFECTING
USA SELF-SUFFICIENCY IN PORK**

(Working Paper 2/94)

Pierre Charlebois and Chris Webber*

**Economic Policy Analysis and Innovation Division
Policy Branch
Agriculture Canada**

February 1994

* Assistance from Roy Blais and Diane Matley in producing tables and graphs, respectively, is gratefully acknowledged. A number of reviewers also provided comments on earlier drafts of this paper which led to significant improvements. The views expressed here are solely those of the authors and should not be attributed to Agriculture Canada.

SUMMARY

- In a study made in the winter of 1993, Sparks Companies Inc. analyzed some of the structural changes in the USA hog industry in the last few years. According to the authors, this should lead to higher productivity and consequently push the USA toward self sufficiency. In our study, we have identified international market developments contributing significantly to the decline in the American pork trade deficit over that same period. These developments were also positive for Canadian pork exports. We showed that a simultaneous improvement in pork trade balance for Canada and the USA is possible.
- The four events are (i) the opening of the Mexican pork market, (ii) a significant reduction in EC pork exports, (iii) a 60% decline in Eastern Europe exports of processed pork and (iv) a 33% reduction in the Japanese pork support price. For Mexico and Japan, those changes led to an increase in excess demand, while for EC and Eastern Europe it resulted in a decline in import supply. Opposing movement in excess demand and import supply generated higher price which improved the self-sufficiency in pork of Canada and the USA.
- Of these four events, only the EC exports could have been affected somewhat by an increased productivity in the USA. In reality the EC exports were much more affected by the strong appreciation of the ECU, the higher demand for good quality pork in the new Laenders following the reunification of Germany and a reduction in supply following serious outbreaks of swine fever in Belgium.
- According to our baseline scenario, the USA trade deficit in pork will continue to gradually decline over the forecast period. It should drop to approximately 49,000 tonnes in 1997 (live hog trade included).
- If the Mexicans had not opened their market in late 1987, the USA deficit in 1997 would have been 140,000 tonnes. The USA pork price would have been 0.58% lower on average over the period of analysis 1988-97. Canada pork exports would have been 6,000 tonnes smaller.
- If EC exports had been maintained at the 1984-88 average levels over the period 1989 to 1997, the USA deficit in 1997 would have been 99,500 tonnes. The USA pork price would have been 0.46% lower on average over the period of analysis 1988-97. Canada pork exports would have been 4,000 tonnes smaller.

(ii)

- If Eastern Europe exports would have been kept to the pre-reform level from 1990 to 1997, the USA deficit in 1997 would have been approximately 90,000 tonnes. The USA pork price would have been 0.34% smaller on average in the period of analysis 1988-97. Canada pork exports would have been 4,000 tonnes smaller.
- If the Japanese government had maintained the profitability level of hog production prevailing in 1986, the USA deficit in 1997 would have been 177,000 tonnes. The USA pork price would have been 0.80% lower on average over the period of analysis 1988-97. Canada pork exports would have been 9,600 tonnes smaller.
- Each factor taken alone does not have a huge influence on the USA pork trade deficit but the combination does. A scenario which includes these four factors was performed. According to our model, in the absence of these four factors, the USA deficit in 1997 would have been 493,000 tonnes. This level would still have been 10% smaller than the 1985 record pork (incl. hogs) deficit of 546,500 tonnes. The USA pork price would have been 3.12% lower on average over the period of analysis 1988-97. Canada pork exports would have been 34,000 tonnes smaller in 1997. These factors in the 1980s and 1990s improved simultaneously the trade balance in pork of Canada and the USA.
- With this analysis, we have shown that many factors exogenous to the USA hog sector influence the American level of self-sufficiency in pork. What happened to the pork market in the second half of the 1980s and beginning of the 1990s is a perfect example of some of the consequences of world market liberalization. With more open markets, even for a large country like the USA, domestic market analysis without considering international markets may lead to a wrong conclusion. Market liberalization will continue in the 1990s. Two countries, South Korea and Mexico (under NAFTA) have decided to further liberalize their pork markets since the commencement of this study and the new GATT agreement will lead to a further liberalization of the Japanese market and an opening of the EC market.

TABLE OF CONTENTS

1.	INTRODUCTION	1
1.1	Description of the Model	1
	General descriptions	1
	Beef Policies	2
	Pork Policies	2
	Other considerations	2
 2.	 DESCRIPTION OF SCENARIOS	 3
2.1	Baseline scenario	3
2.2	The Mexican Scenario	5
2.3	The European Community Scenario	5
2.4	The Eastern Europe Scenario	7
2.5	The Japanese Scenario	8
 3.	 SCENARIO COMBINATIONS	 10
3.1	Combination of the Mexican and EC Scenarios	10
3.2	Combination of the Mexican, EC, and Eastern Europe Scenarios	11
3.3	Combination of the Mexican, EC, Eastern Europe and Japan Scenarios ..	11
 4.	 OTHER FACTORS INFLUENCING THE USA SELF-SUFFICIENCY IN PORK	 12
 5.	 CONCLUSION	 12

LIST OF FIGURES:

FIGURE 1: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA	14
FIGURE 2: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA	15
FIGURE 3: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA, 1997	16
FIGURE 4: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA (MEAN 1988-1987)	17
FIGURE 5: CANADIAN EXPORTS OF PIGMEAT (INCL. ANIMALS), 1997	18
FIGURE 6: CANADIAN EXPORTS OF PIGMEAT (INCL. ANIMALS) (MEAN 1988-1997)	19

TABLE OF CONTENTS (Continued)

LIST OF FIGURES: (Continued)

FIGURE 7: PRODUCER PRICE OF PIGMEAT, USA (% DIFFERENCE WITH BASE SCENARIO AT THE MEAN)	20
FIGURE 8: PRODUCER PRICE OF PIGMEAT, CANADA (% DIFFERENCE WITH BASE SCENARIO AT THE MEAN)	21

APPENDIX 1

TABLE 1 DEMAND ELASTICITIES	22
TABLE 2 SUPPLY ELASTICITIES	23

APPENDIX 2

TABLE 1 MACROECONOMIC VARIABLES: HISTORIAL AND FORECAST . .	24
TABLE 2 EXPORT OF PIGMEAT (INCL. ANIMALS) CANADA (000 TONNES) .	25
TABLE 3 PRODUCER PRICE OF PIGMEAT, CANADA (C\$/100 kg)	26
TABLE 4 IMPORTS OF PIGMEAT, JAPAN (000 TONNES)	27
TABLE 5 PRODUCER PRICE OF PIGMEAT, JAPAN (000 Y/100 kg)	28
TABLE 6 NET EXPORTS OF PIGMEAT (INCL. ANIMALS), MEXICO (000 TONNES)	29
TABLE 7 PRODUCER PRICE OF PIGMEAT, MEXICO (000 P/100 kg)	30
TABLE 8 NORTH PACIFIC MARKET NET EXPORTS OF PIGMEAT (000 TONNES)	31
TABLE 9 EXPORTS OF PIGMEAT, TAIWAN (000 TONNES)	32
TABLE 10 NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA (000 TONNES)	33
TABLE 11 PRODUCER PRICE OF PIGMEAT, USA (US\$/100 kg)	34

REFERENCES	35
----------------------	----

1. INTRODUCTION

Sparks Companies Inc. analyzed some of the structural changes in the USA hog industry in the last few years in its study (1) on the USA hog industry competitiveness for the Special Measure Committee under the National Tripartite Stabilization Program for hogs. According to the authors, this should lead to higher productivity and consequently push the USA toward self sufficiency in the 1990s. It is clear that if competitors are not increasing their productivity at the same pace, the USA will become more self sufficient. The achievement (if it ever happens) of self sufficiency in the 1990s would be bad news for Canadian pork exports if it was solely due to structural changes in the USA. If other international factors contribute to this achievement, it may not be bad for Canadian pork export. We have identified many events in the last part of the 1980s and beginning of the 1990s which improved the pork trade balance in both Canada and the USA. The objective of this report is to examine the influence of some of these events on self-sufficiency in pork by the USA in the past and what it might be in the future. The impact on the Canadian industry will also be reported.

The study contains four parts. A presentation of the model used to discover the impact of these international events is given in the first part. The baseline and the four individual scenarios are presented in the second section. The scenarios analyze the impact of; (i) the opening of the Mexican pork market, (ii) a significant reduction in EC pork exports, (iii) a 60% decline in Eastern Europe exports of processed pork and (iv) a 33% reduction in the Japanese pork support price. Each sub-section includes a description of the analysis followed by the results. Results of scenario combinations are presented in the third section. Finally in the last section, other factors influencing USA self sufficiency in pork are identified.

1.1 Description of the Model

General description

To carry out the analysis, the Economic Policy Analysis and Innovation Division of Agriculture Canada built a non-spatial annual dynamic partial equilibrium model of the red meat markets in the Pacific region. The model includes the following countries: Canada, United States, Mexico, Australia, New Zealand, Japan, South Korea, Taiwan, Hong Kong (only beef) and Singapore (only beef) and the following commodities - pork and an aggregation of beef and veal. Production and trade are indigenous i.e. live animal trade (in meat equivalent) are included in the overall production and trade numbers.

Most of the foot and mouth disease free countries of the world are located in this region. It is true that Ireland and Denmark are also foot and mouth disease free countries, but under the Keran-Andriessen agreement between EC and Australia, the EC has agreed not to use beef export subsidies in most of the Pacific countries. On the other hand, Denmark is a big exporter of pig meat to the North Pacific market especially to Japan. Since most of Denmark's exports are only possible because of an export subsidy, this variable acts as a policy instrument in the model and is consequently exogenous. Based on these considerations, the inclusion of the EC meat markets as endogenous components in the model was not judged necessary.

The analysis is partial because the rest of the economy and the grain market in particular, are exogenous. Supply and demand elasticities are provided in Table 1 and 2 of Appendix 1.

Beef policies

The USA meat import law is included in the model. The USA beef imports cannot be higher than the trigger level under the meat import law¹. Replacement of import quota by tariff in the Japanese beef market in 1991 is included in the model. The Korean "liberal" beef import quota are captured in the price wedge² to the USA beef price. The Mexican cattle export tariff and the Canadian National Tripartite Stabilization Programs (NTSP) for beef are included as exogenous variables. It should be noted that the NTSP for slaughter cattle in Canada generated relatively high payments in 1988, 1989 and 1991. Any change in beef price in these years would have changed the payments. The model will not capture that. In the context of an annual international model used to analyze the pork market, we concluded that the benefits of endogenizing the three Canadian programs (especially the two monthly programs) were small relative to costs.

Pork policies

The Mexican pork tariff is introduced as an exogenous variable. The Japanese minimum pork import price policy is captured in the price wedge to the US pork price. The Canadian hog stabilization program is endogenised on an annual instead of a quarterly basis. Because of severe hygienic import controls, Australia and New Zealand are excluded from the Pacific pork market component of the model. They form a small two country market in the model.

Other considerations

The distribution of an impact to different countries trade balance resulting from a market shock depends on the relative size of each country, the sum of the absolute value of supply and demand own price elasticities and the domestic to world price elasticity³. In the case of the North Pacific pork market, the USA represents 60% of total consumption and the sum of the supply and demand elasticities are the highest. Because of their domestic policies, the domestic to world price elasticity for Japan, Mexico and South Korea are much smaller than for Canada at 0.94 or Taiwan which has to compete with the USA in the Japanese market.

¹ In this model, live trade in meat equivalent is included in the trade numbers and consequently, when tested against the trigger level, USA beef imports are adjusted to take into account of live imports from Canada and Mexico. Because of FTA, Beef imports from Canada also had to be excluded from that test.

² Price wedge is calculated as the difference between the USA price expressed in Won and the Korean domestic price of cattle. It includes quality differences, transport costs and domestic price support through the import quota.

³ Percentage change in domestic price due to a one percent change in world price.

The partial nature of the model should be kept in mind. The North Pacific pork market is sufficiently important to have some influence on international grain prices. In reality, any reduction in pork production resulting from change in pork policies would have a downward movement in feed price. This model will not capture that. This limitation affects the results of each country, but since the USA has the highest pork supply feed price elasticity, the USA is more affected. On the other hand, comparing the size of the feed consumption of that commodity in that region with world feed consumption, the impact on world feed prices should not be strong enough to significantly change any of the conclusions made in this document.

2. DESCRIPTION OF SCENARIOS⁴

A number of events have occurred since the mid-1980s which have had a significant impact on the history and baseline forecast of the North Pacific pork market. These events; opening of the Mexican pork market, an important reduction in EC pork exports, a 60% decline in Eastern Europe exports of processed pork and a 33% reduction in the Japanese pork support price, would help explain the US's move toward self-sufficiency. The associated five scenarios include:

1. Baseline;
2. Mexican imports are reduced to pre-1988 levels;
3. EC exports are increased to pre-1989 levels;
4. Eastern Europe exports are increased to levels which prevailed prior to restructuring;
5. The Japanese support price is raised to the level prevailing in the mid-1980s.

In the first part of the study each scenario is analyzed individually. Key variables are modified holding all other exogenous variables to their baseline scenario values. A 10 years simulation was chosen in order to capture adequately the dynamic of the hog cycle. As well, for most countries in this model, the hog supply almost completely adjust to new level of price after 10 years of simulation.

2.1 Baseline Scenario

The main assumptions are presented in Table 1 of Appendix 2. These assumptions are based on the medium term outlook done by the OECD for the 1993 Monitoring and Outlook report. On average over the 1988-1997 period, the currency of New Zealand, Australia, Hong Kong and Mexico are assumed to be weaker against the USA dollar than in the 1980-1987 period. The inverse is true for Canada, South Korea, Singapore, Taiwan and Japan. The appreciation of the yen and of the Taiwanese dollar are particularly strong. Following the FTA

⁴ Unless otherwise specified, the quantities presented in this document are on a cold carcass weight basis. Results for Canadian, Japanese, Mexican and American trade and price are respectively presented in Tables 2 and 3, 4 and 5, 6 and 7 and 10 and 11 of Appendix 2. Taiwan exports are presented in Table 9 while the North Pacific countries' overall net exports with the rest of the world are shown in Table 8.

between Canada and the USA, the Canadian dollar appreciated at the end of the 1980s and this explains why Canada is in the second group.

The average real GDP growth rate of the four new industrialized countries is assumed to vary between 5.1 and 7.6% over the 1988-1997 period. Japan and Mexico should follow with 4.2 and 3.6% respectively. The growth rate in Canada, USA and Australia is assumed to vary between 2 and 3% on average, while for New Zealand it is assumed to only be 1% .

Except for Mexico, inflation is assumed to be kept under control over this period. In the case of Mexico, the average number is influenced by a 214% inflation rate in 1988. The exclusion of that particular year reduces the average to 18%. South Korea and Hong Kong are assumed to have inflation rates twice the size of the other Pacific countries' rates. These average rates are assumed to vary between 2 and 5%.

Since the analysis was done before the ratification of NAFTA and GATT agreement, no change to agricultural policies was assumed. Canada's NTSP hog program was kept endogenous in the model and the Mexican pork tariff was kept constant over the forecast horizon.

The scenario is one of fairly low grain prices especially over the forecast period. As we will see in Section 4 of the document, that in itself influences the USA self-sufficiency in pork. The average feed price index in the USA, which is composed of coarse grains, wheat and oilseed meals, is 16% smaller in the 1987 to 1996 period than in the 1980-1985 period. The USA hog price generated in the baseline is presented in the first row of Table 11. This hog price implies an increase of 13% in the hog/feed price ratio in the 1988 to 1997 period compared with the 1981 to 1986 period. This is mostly due to a 25% increase in the USA beef price between the two periods and to a reduction in the share of feed cost in the overall pork production variable cost.

Based on these assumptions, the USA deficit in pork including trade of hogs, would be less than 50,000 tonnes in 1997. Most of the decline has already happened. Since 1985, when the deficit reached 546,500 tonnes (incl. hogs), it has been reduced in every year except 1987. The largest reductions were made between 1988 and 1992. As can be seen from Table 10, the model predicts a gradual decline in the deficit over the forecast period. A deficit of 49,000 tonnes in 1997 could correspond to the live hog imports from Canada since an average of 57,000 tonnes cold carcass weight equivalent of hogs were imported in the 1988 to 1992 period.

The baseline scenario is consequently consistent with the implicit forecast made by Sparks Companies Inc. in the study on the USA hog competitiveness. But since the beginning of 1993 when the grain price forecasts were generated, the USA had a serious flood and as a result, 1993-94 grain price forecasts are now higher. This will obviously affect the baseline forecast and consequently readers should consider the difference between the alternative scenarios and the baseline instead of the absolute value presented in each scenario.

2.2 The Mexican Scenario

In late 1987, Mexico opened its market by replacing its import quota with a 20% tariff on pork and pork products. As a result, pork imports increased rapidly. Before 1988 the maximum level of pork imports (including live hogs in carcass weight equivalent) was 2,000 tonnes (AGROSTAT-FAO database). This change in Mexican trade policy and the resulting increase in imports raised the price of pork in the North Pacific market.

The Mexican scenario simulates what would have occurred if Mexico had not opened its market. Consequently, in this scenario, Mexico's net imports of pork are set to 2,000 tonnes from 1988 through the end of the forecast period in 1997 as you can see in Table 6 of Appendix 2. This corresponds to an average decline of 88,000 tonnes.

Since the baseline scenario was done before the ratification of NAFTA, the pork tariff is maintained at 20% throughout the forecast period. Under NAFTA, the tariff will be eliminated over a 10 year period. Consequently this analysis does not capture the impact on pork price resulting from the elimination of the Mexican pork tariff.

The lower Mexican import demand in this scenario would have reduced the USA pig meat producer price by 0.58% on average compared to baseline. In 1997, the USA pork (incl. animals) net exports would have been -140,390 tonnes compared with -49,250 tonnes in the baseline scenario. This 91,140 tonnes difference represents 78% of the shock imposed on the North Pacific market in 1997 through lower Mexican imports (-116,870 tonnes). The price in Canada falls on average by a similar amount, 0.55%. Canadian exports are two percent or 6,000 tonnes smaller in 1997.

The rest of the adjustment is made in three Asian countries. Because of cheaper meat, Japan imports 8,000 tonnes more in 1997. This only represents 7% of the shock imposed on the North Pacific market compared with a Japanese consumption share of 17%. This difference is not due to low own price supply and demand elasticities but rather to the pork policy of that country. Taiwan exports are 8,000 tonnes smaller in 1997 because of tougher competition from the USA in the Japanese market resulting from the lower USA price. Finally, because of stronger competition from Taiwan and the USA, South Korea exports to Japan fall by 3,000 tonnes in 1997.

2.3 The European Community Scenario

The Economic Community (mainly Denmark) ships a significant amount of pork to Japan and the USA. The mean level of EC exports to all destination for the period 1984-88 was 731,000 tonnes. However, this trade has declined in recent years. During the 1989-92 period, exports have averaged 570,000 tonnes. In the forecast years of the baseline scenario we assumed the EC would be confronted with fewer problems and would consequently be able to export an average of 627,000 tonnes of pork. Japan and the USA are not the only clients of the EC. In the 1980s on average close to 2/3 of EC exports were directed to North Pacific countries.

The EC also imports pork. Imports for the 1993-97 period, are set to the average level from 1989 to 1992 (150,000 tonnes). This is the most recent 4-year period for which data are available.

Although part of the decrease in exports could be due to the increased competitiveness of other producing nations, several other important internal factors could help explain the decline:

1. the ECU gradually (except in 1989) appreciated from 1.31 ECU per US\$ in 1985 to an average of 0.80 ECU per US\$ in 1990 to 1992, resulting in higher export restitution costs on a per tonne basis;
2. the demand for pork increased significantly in Germany as a result of the restructuring associated with unification (Agra Europe, Feb.7 and Aug.14, 1992); and
3. the supply within the EC was also affected following serious outbreaks of "swine fever" in Belgium in 1990 and "mysterious swine disease" in the Netherlands in 1991 (Agra Europe, Nov.27, 1992, p.M/4).

Lower export levels by the EC put upward pressure on pork prices in the North Pacific. These higher prices would aid the US in moving toward self-sufficiency by signalling producers to increase production, and consumers to reduce their purchases of pork. At the same time, the higher price would benefit Canadian producers.

The EC scenario simulates what would have occurred if the EC had not reduced its pork exports, i.e exports to all countries are assumed to equal 731,400 tonnes from 1989 to 1997. This represents an average increase of 68,000 tonnes to the North Pacific countries over the 1988 to 1997 period⁵.

With higher EC pork export supply in this scenario, the USA pig meat producer price would have been 0.46% lower on average over the 1988 to 1997 period⁶. In 1997, the USA pork (incl. hogs) net exports would have been -99,530 tonnes compared with -49,250 tonnes in the baseline scenario. This 50,280 tonnes difference represents 75% of the shock imposed to the North Pacific market in 1997 through higher EC exports (67,290 tonnes). The price in Canada falls on average by a similar amount, 0.43%. Canadian exports are 1.37 percent or 4,050 tonnes smaller in 1997.

⁵ In the model, the level of EC pork exports is an exogenous variable used in the equation which explains the North Pacific countries net exports with all regions outside this zone (see Table 8).

⁶ There is no difference between this scenario and the baseline scenario in 1988 since the shock was introduced in 1989.

The rest of the adjustment is made in the three Asian countries and Mexico. Because of cheaper meat and larger available supplies from EC, Japan imports 4,000 tonnes more in 1997. Taiwan exports are 5,660 tonnes smaller in 1997 because of tougher competition from the EC in the Japanese market. The rest of the adjustment (3,290 tonnes) is made in Mexico and South Korea.

2.4 The Eastern Europe Scenario

All of Eastern Europe exports to the North Pacific region are processed pork, USA being the largest client. Because of foot and mouth disease in these countries, imports of non-cooked pork is not authorized in any of the North Pacific countries. Since a relatively important part of the international trade of pork is in processed form, exchange between foot and mouth disease free and endemic regions of the world is easier than for a commodity such as beef for example. On the other hand the importance of fresh pork trade prevents the formation of one world pork market. Historically, over half the exports have been from Poland. However, significant amounts are also shipped from Yugoslavia, Hungary, and Romania.

In 1990, the significant political changes in Eastern Europe led to a major restructuring of the economies of those countries. As a result, processed pork exports dropped significantly. For example, exports of Polish ham to the U.S. in 1991 were down 85% from the 1990 level, and only 17% of those in 1988 (Agra Europe, May 1, 1992, p. M/3). The reduced supply to the North Pacific region would lead to a higher price in that market which would contribute to self-sufficiency in the US.

The baseline includes the beginning of this restructuring process. Thus, the Eastern Europe scenario models the outcome if restructuring had not occurred. In particular, exports from Eastern Europe to the North Pacific region are increased to pre-1990 mean.

According to U.S. Foreign Agricultural Trade Statistics, mean exports from Eastern Europe during the period 1980 to 1989 were 96,200 tonnes (carcass weight basis). Between 1990 and 1992, however, exports averaged 40,700 tonnes, a drop of 55,500 tonnes. Thus, in the scenario, exports from Eastern Europe were increased by 55,500 tonnes from 1990 to 1997 to equal levels which prevailed during the 1980s⁷.

Besides market reform, other factors which could explain the drop in exports are war in Yugoslavia (also related to the political changes); inflation, particularly in Poland; and a serious drought which affected Poland and Hungary (USDA, LPS-52, Feb. 1992, p.14). Considering the important depreciation of Eastern Europe currencies since the beginning of the reforms, the drop in exports cannot be explained by increased competitive pressure from other pork producing nations.

⁷ In the model, the level of Eastern Europe pork exports is an exogenous variable used in the equation which explains the North Pacific countries net exports with all regions outside this zone (see table 8).

With higher Eastern Europe pork export supply in this scenario, the USA pig meat producer price would have been 0.34% lower on average over the 1988 to 1997 period⁸. In 1997, the USA pork (incl. animals) net exports would have been -90,060 tonnes compared with -49,250 tonnes in the baseline scenario. This 40,810 tonnes difference represents 73% of the shock imposed to the North Pacific market in 1997 through higher Eastern Europe exports (55,500 tonnes). The price in Canada falls on average by a similar amount, 0.31%. Canadian exports are 1.35 percent or 3,990 tonnes smaller in 1997.

The rest of the adjustment is made in three Asian countries and Mexico. Because of cheaper meat in North America, Japan imports 3,000 tonnes more in 1997. Taiwan exports are 4,690 tonnes smaller in 1997 because of tougher competition from the USA in the Japanese market. An adjustment of 3,000 tonnes is made in Mexico and South Korea.

2.5 The Japanese Scenario

The Japanese government maintains an upper and lower stabilization price for pork carcasses with the standard import price (SIP) being the average of the two adjusted for the cutting percentage (75%). The SIP increased rapidly from 1970 to 1977, levelled off until 1985, then declined sharply (20). Between 1981 and 1984, the average price was 61.95 Yen per 100 kg, compared to a mean value of 41.95 Yen per 100 kg between 1987 and 1990 (OECD, PSE database).

Although the support price of the product fell, feed prices also declined sharply. Feed grains are imported essentially without restrictions. Between 1985 and 1987, producers' costs for feed declined by approximately 40% due to the appreciation of the Yen (from 238.54 in 1985 to 144.64 Yen per US\$ in 1987), and the general decline in world grain prices.

Although the feed share of costs dropped, the margin of price over costs also shrank resulting in reduced support for Japanese producers. At the same time, other costs of production increased, particularly those related to pollution control (20). Consequently, production grew at a slower rate than consumption, and by 1988, imports rose significantly from under 300,000 tonnes in 1986 to approximately 500,000 tonnes by 1989 (17). Japan has now replaced the USA as the largest pork importer (21).

In the scenario, Japan's support price for pork is maintained at the 1986 level in subsequent years. By fixing the support price at the 1986 level (47.3 Yen per 100 kg carcass), the margin of price over feed costs is stabilized in real terms, and imports return to 1986 levels. This corresponds to an average decline of 222,820 tonnes as can be seen in Table 4 of Appendix 2.

⁸ There is no difference between this scenario and the baseline scenario in 1988 and 1989 since the shock was introduced in 1990.

Taiwan has important cultural and location advantages in the Japanese market and it appears to have no significant alternative markets. Indeed, essentially all of Taiwan's exports are shipped to Japan. Thus it is assumed that the same level of growth in Taiwan's production capacity (assisted by Japanese investment) would not have occurred if Japan had not experienced the same import growth.

Furthermore, it is assumed that Japan would limit its dependence on any one source of supply. The historical data indicates that Taiwan's share grew steadily from under 10% in 1982 to over 40% in 1987. In recent years, it has averaged about 40%, reaching a maximum of 52% in 1990 (20). Consequently, in the scenario, Taiwan's exports are capped at 52% of Japan's import⁹.

EC is assumed to maintain its average historical share of Japanese imports at 33% (20). Therefore, in the scenario, the reduction in EC exports to the North Pacific region in every year corresponds to 33% of the decline in Japanese imports. EC, however, does have alternative markets (e.g. USA), and consequently, this reduction represents the maximum adjustment likely to occur.

Because of lower Japanese import demand in this scenario, the USA pig meat producer price would have been 0.80% smaller on average over the 1988 to 1997 period. In 1997, the USA pork (incl. animals) net exports would have been -176,800 tonnes compared with -49,250 tonnes in the baseline scenario. This 127,550 tonnes difference represents 38% of the shock imposed to the North Pacific market in 1997 through lower Japanese imports (338,720 tonnes). This number does not represent the impact on the USA pork trade with Japan. It represents the increase in the USA deficit with every countries due to lower USA price resulting from the change in the Japanese support price. Since the USA has the largest own price supply and demand elasticities in the North Pacific pork market, the increase in the deficit will automatically be somewhat larger than their loss in the Japanese market. This result is consistent with the level of American exports of pork to Japan in 1992 of almost 100,000 tonnes (cold carcass weight basis) (USDA, Liv. & Poul., July 1993) .

The price in Canada falls on average by a similar amount, 0.76%. Canadian exports to all countries are 3.24 percent or 9,570 tonnes smaller in 1997.

Because of the adjustments made to its production in this scenario, Taiwan's exports falls by 38% or by 81,000 tonnes in 1997. This represents 24% of the shock imposed to the North Pacific market in 1997 through lower Japanese imports.

⁹ The model being non spatial, the close relationship between Japan pork imports and Taiwan pork exports is not imposed in any of the equations. Consequently to make this scenario more realistic, a downward adjustment to Taiwan's production was made. It was adjusted in such a way that Taiwan's share of Japan's imports could not exceed 52% in any one year.

The adjustment made to EC exports in this scenario corresponds approximately to 110,000 tonnes in 1997 (see the difference between the Japan and the base scenario in Table 8). Denmark alone exported 154,098 tonnes product weight basis of pork to Japan in 1992 or approximately 206,000 tonnes on carcass weight basis (Agra-Europe). This 110,000 tonnes represents 32% of the shock imposed to the North Pacific market in 1997 through lower Japanese imports. The rest of the adjustment (11,000 tonnes) is made in Mexico and South Korea.

3. SCENARIO COMBINATIONS

The four scenarios described above were analyzed separately. These four events which are included in the baseline were clearly favourable to Canadian pork producers since they have either increased pork demand, or reduced competition. The analysis estimates what would have been the outcome for the North Pacific pork market if these events had not occurred.

Next, various combinations of the 4 scenarios were analyzed:

1. Mexican and EC scenarios were combined;
2. Mexican, EC, and Eastern Europe scenarios were combined;
3. Mexican, EC, Eastern Europe, and Japanese scenarios were combined.

In the combination involving the Japanese scenario, Taiwan's share of Japan's imports was again capped at the historical high of 52%. Contrary to the level used in the Japanese scenario alone, where EC exports were assumed to be smaller than in the baseline scenario, in this combination, to fully take into account of the four individual scenarios, EC exports were maintained at the level used in the EC scenario. This last scenario represents an extreme in which Taiwan and EC would capture 100% of the Japanese market and EC would export around 240,000 tonnes of pork to the remaining two open markets, i.e. Canada and the USA in 1997. In 1987, the EC exported approximately 175,000 tonnes of pork to Canada and the USA without any CVD actions. On that basis, the scenario does not seem totally unrealistic.

3.1 Combination of the Mexican and EC Scenarios¹⁰

Under this combination of scenarios, the USA pig meat producer price would have been 1.06% smaller on average. In 1997, the USA pork (incl. animals) net exports would have been -191,840 tonnes compared with -49,250 tonnes in the baseline scenario. This 142,950 tonnes difference represents 77% of the shock imposed to the North Pacific market in 1997 through lower Mexican imports and higher EC exports. The price in Canada falls on average by a similar amount, 1.0%. Canadian exports are 3.5 percent or 10,000 tonnes smaller in 1997.

¹⁰ This combination corresponds to scenario 6 in the Tables and figures.

The rest of the adjustment is made in three Asian countries. Because of cheaper meat and higher availabilities from EC, Japan imports 12,000 tonnes more in 1997. Taiwan exports are 14,000 tonnes smaller in 1997 because of tougher competition from the EC and the USA in the Japanese market. Finally, South Korea exports to Japan also fall by 6,000 tonnes in 1997.

3.2 Combination of the Mexican, EC and Eastern Europe Scenarios¹¹

Under this combination of scenarios, the USA pig meat producer price would have been 1.41% smaller on average. In 1997, the USA pork (incl. animals) net exports would have been -233,650 tonnes compared with -49,250 tonnes in the baseline scenario. This 184,400 tonnes difference represents 77% of the shock imposed to the North Pacific market in 1997 through lower Mexican imports and higher EC and Eastern Europe exports. At 234,000 tonnes, the American deficit in pork, under this scenario, would almost be back in 1997 to the 1991 historical level. The price in Canada falls on average by a similar amount, 1.32%. Canadian exports are 4.9 percent or 14,000 tonnes smaller in 1997.

The rest of the adjustment is made in three Asian countries. Because of cheaper meat and higher availabilities from EC, Japan imports 15,000 tonnes more in 1997. Taiwan exports are 19,000 tonnes smaller in 1997 because of tougher competition from the EC and the USA in the Japanese market. Finally, South Korea exports to Japan also fall by 7,600 tonnes in 1997.

3.3 Combination of the Mexican, EC, Eastern Europe and Japan Scenarios¹²

Under this combination of scenarios, the USA pig meat producer price would have been 3.12% smaller on average (see Table 11). In 1997, the USA pork (incl. animals) net exports would have been -493,140 tonnes compared with -49,250 tonnes in the baseline scenario (see Table 9). This 444,000 tonne difference represents 77% of the shock imposed to the North Pacific market in 1997 through lower Mexican and Japanese imports and higher EC and Eastern Europe exports.

At 493,140 tonnes, the American deficit in pork, under this scenario in 1997, would still be smaller than deficits recorded in 1985, 1986 and 1987. It would be 10% smaller than the record deficit of 1985. This is an extreme scenario in which every thing goes wrong for the USA and Canada.

The price in Canada falls on average by a similar amount, 2.94%. Canadian exports are 11.6 percent or 34,000 tonnes smaller in 1997. The rest of the adjustment is made in Taiwan (-80,000 tonnes) and South Korea (-19 000 tonnes) exports.

¹¹ This combination corresponds to scenario 7 in the Tables and figures.

¹² This combination corresponds to scenario 8 in the Tables and figures.

4. OTHER FACTORS INFLUENCING THE USA SELF-SUFFICIENCY IN PORK

In April 1987, Taiwan eliminated its slaughter tax for hogs destined to local market. This reduced consumer price and stimulated consumption (12). The decline in excess supply reduced somewhat Taiwan's capacity to compete with the USA in the Japanese market. Pork aid shipment and subsidized exports to FSU and Poland were given for the first time by Canada and the USA in that period. Even though numbers were small it still contributed to the improvement of the USA pork self-sufficiency. South Korea and Taiwan capacity to export to Japan were affected by detected chemical residues in that period. These events also improved Canada's capacity to export pork.

Finally and more importantly, the level of grain prices is also a key factor contributing to the USA self-sufficiency in pork. In the USA, approximately 75% of the hog production is still done in grain producing regions. Hog production on those farms are often a second activity and as a result non feed inputs (labor, maintenance, etc.) are less important than for a specialized hog farmer. For those non-specialized hog farms in the USA, feed costs represents a higher percentage of variable cost than for a specialized farmer. Since the USA has the highest percentage of non-specialized hog farmers among the countries of the North Pacific, its pork supply feed price elasticity is the highest in that market. When feed prices are high they cut production more than others including Canada. But when feed prices are low, the inverse prevails. So when international grain prices are low it is clearly detrimental to Canadian pork exports.

Since the grain trade war has started, except in drought years, prices of feed have been relatively low and are assumed to stay low in the forecast period. On that basis we can conclude that the absolute level of grain prices since 1986 also contributed to the achievement of self-sufficiency in pork by the USA. This phenomena is not related to change in the hog production structure.

According to Sparks Companies Inc. the structural change in the USA hog production should lead to a decline in the numbers of non-specialized hog farmer in the USA. If it is true, the USA hog supply feed price elasticity should gradually get closer in the future to the elasticities of the other countries in that market. As it happens, the influence of international grain prices on the pork trade performance of these countries will diminish.

5. CONCLUSION

With this analysis, we have shown that many international market developments exogenous to the USA hog sector influence the American level of self-sufficiency in pork. Since trade represents a small proportion of consumption in the USA, a small change in price can make a big relative change in the net trade level. Four external factors were analyzed. If these four events had not occurred, the USA pork trade deficit would have been much higher and Canada would have lost exports as well. It is clear from this analysis that an improvement in

the USA self-sufficiency may just be, under certain circumstances, an indication of a better market for all North American producers.

What happened to the pork market in the second half of the 1980s and the beginning of the 1990s is a perfect example of some of the consequences of world market liberalization. With more open markets, even for a large country like the USA, domestic market analysis without considering international markets may lead to a wrong conclusion. Market liberalization will continue in the 1990s. Already since we started this study, two countries have decided to further liberalize their pork markets. Mexico under NAFTA will gradually eliminate the 20% tariff and South Korea signed an agreement with the USA to liberalize somewhat its pork market. The new GATT agreement will lead to a further liberalization of the Japanese market and an opening of the EC market.

FIGURE 1: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA

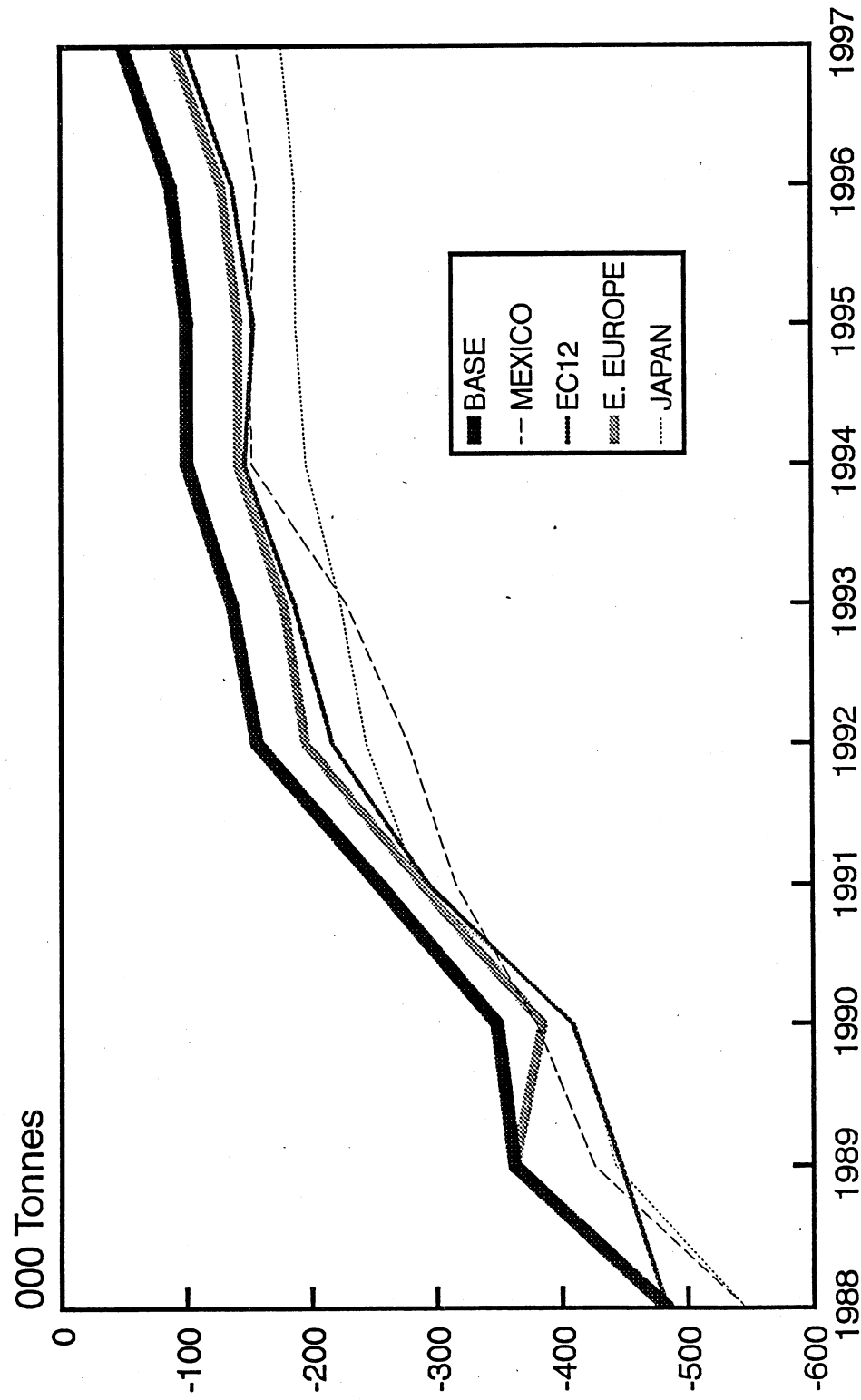


FIGURE 2: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA

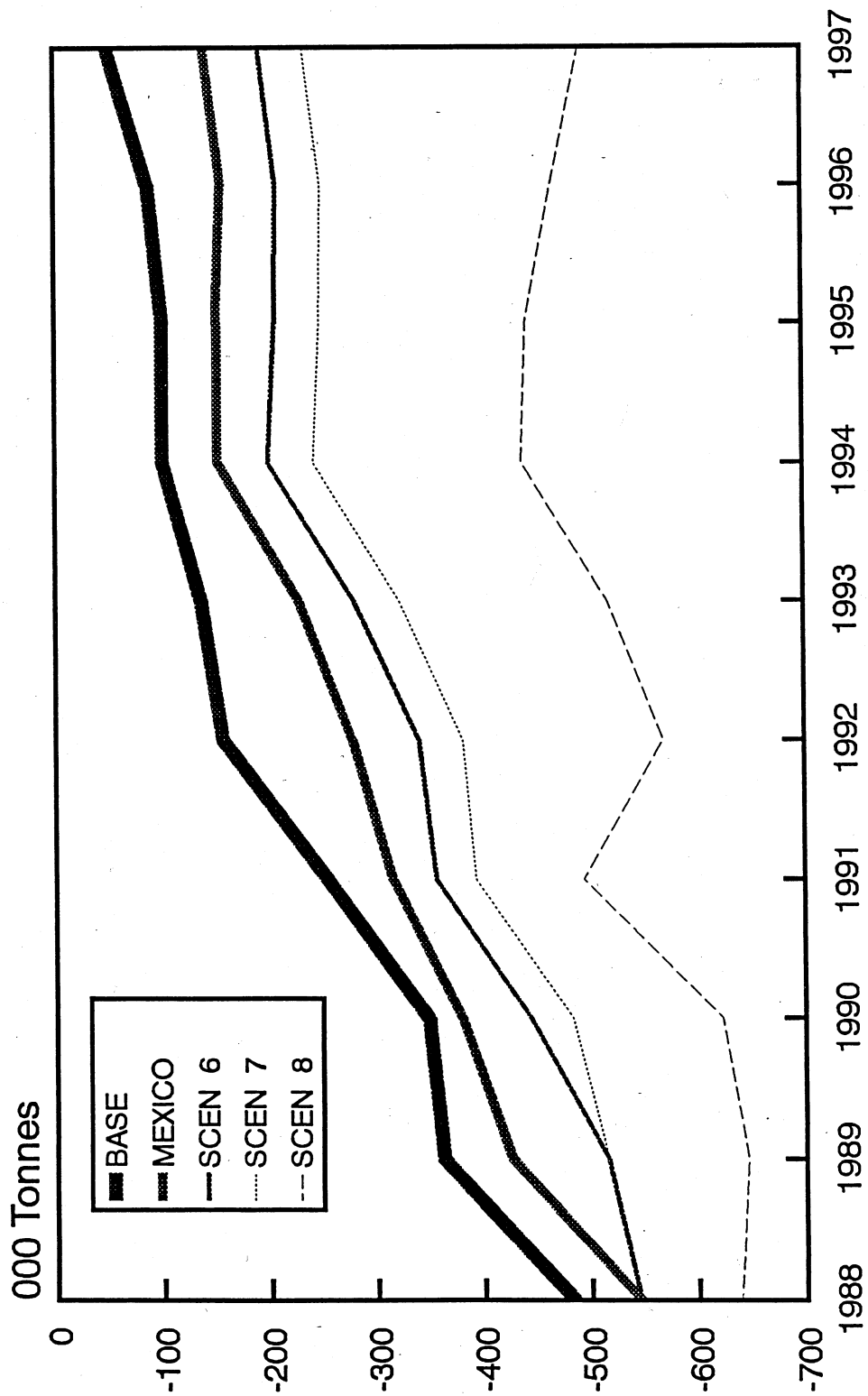


FIGURE 3: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA

1997

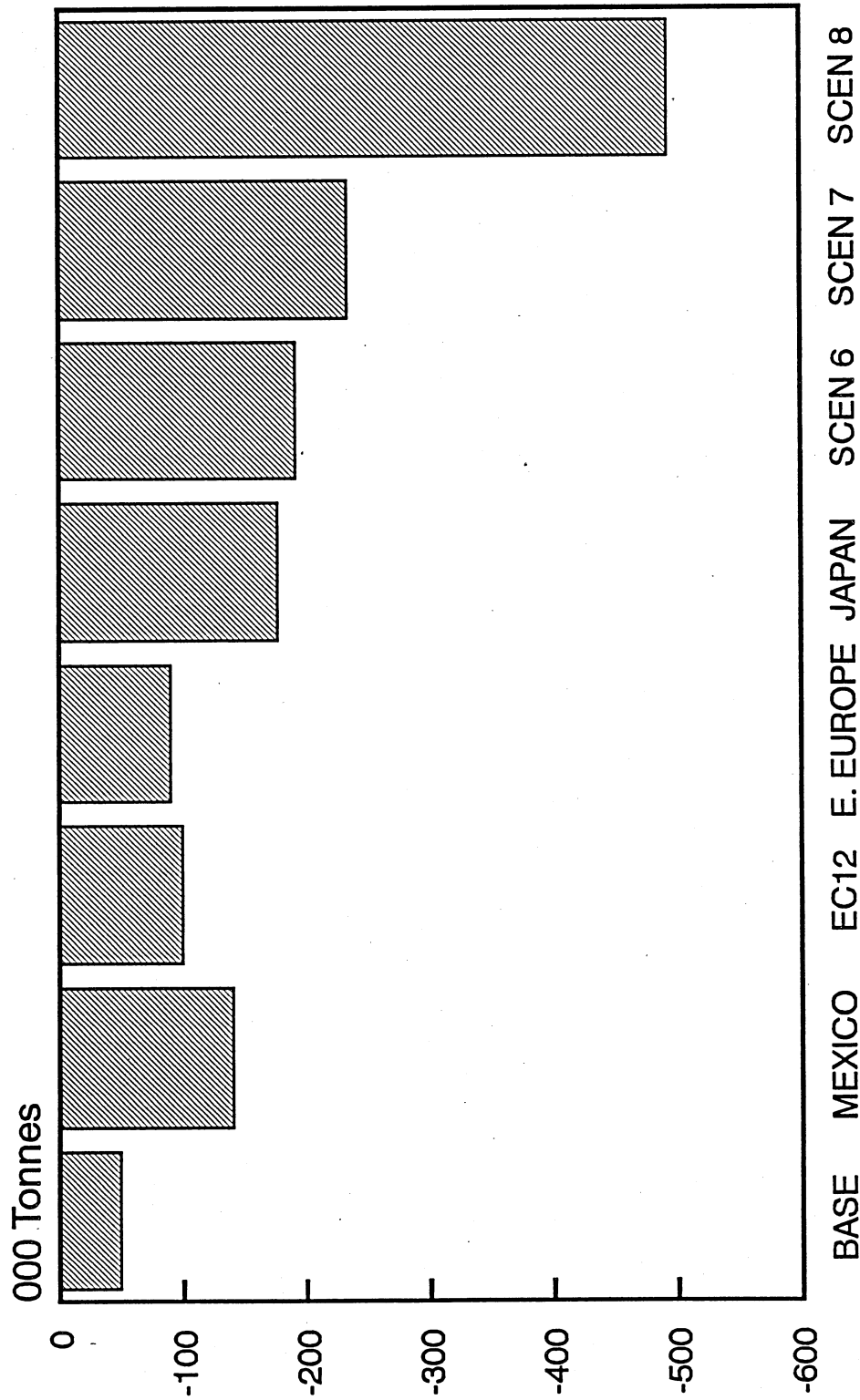


FIGURE 4: NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA
(MEAN 1988-1997)

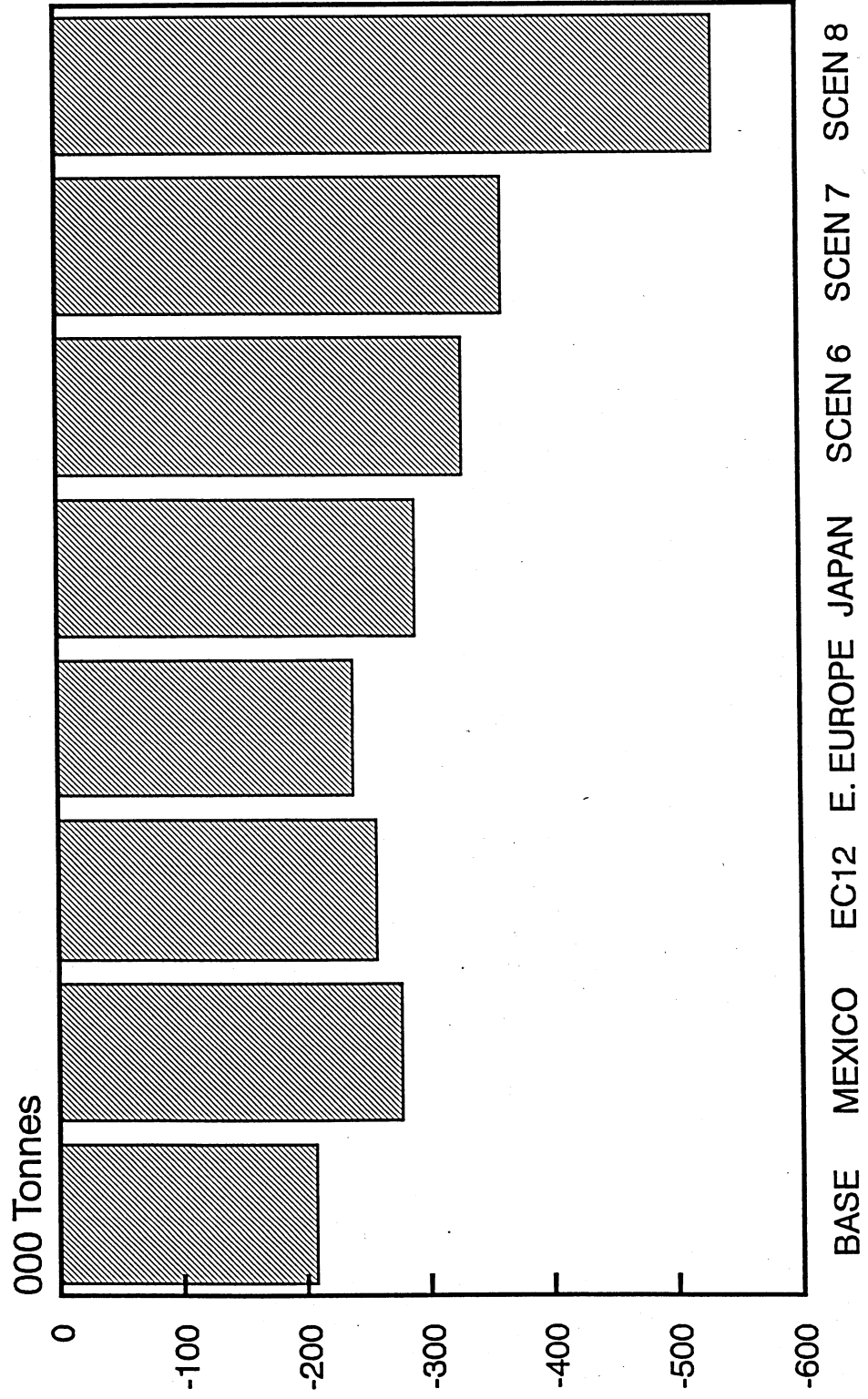


FIGURE 5: CANADIAN EXPORTS OF PIGMEAT (INCL. ANIMALS)

1997

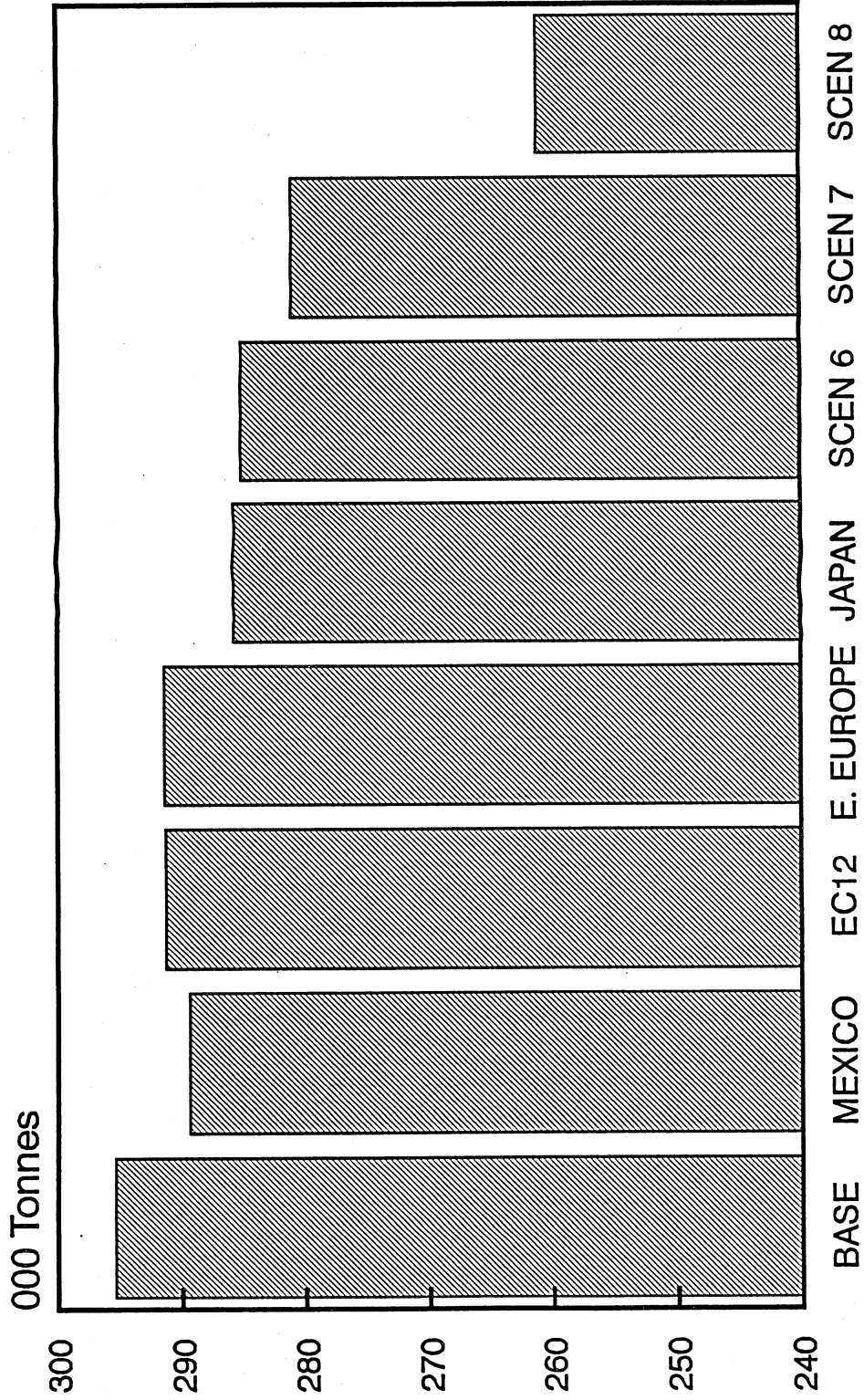


FIGURE 6: CANADIAN EXPORTS OF PIGMEAT (INCL. ANIMALS)
(MEAN 1988-1997)

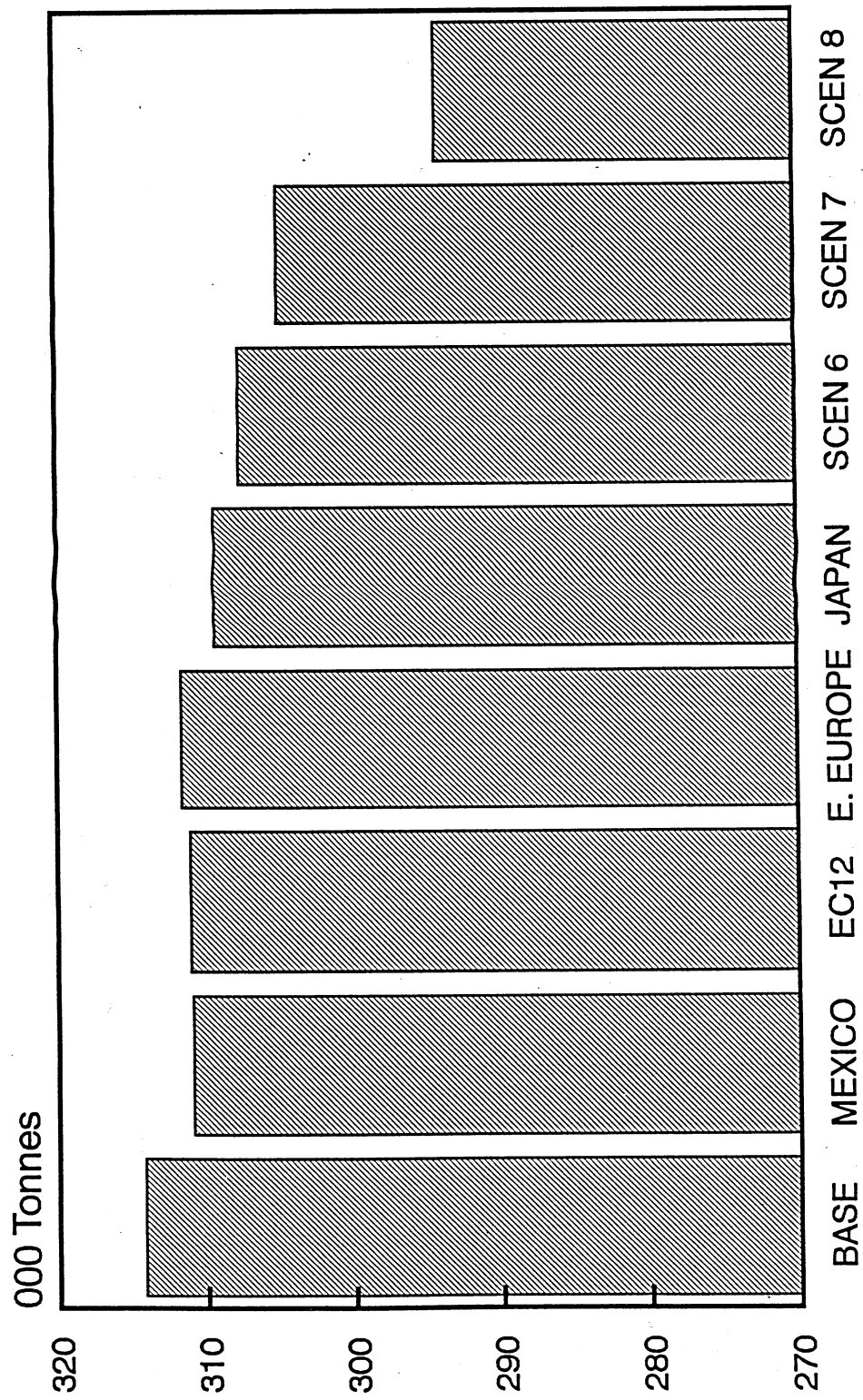


FIGURE 7: PRODUCER PRICE OF PIGMEAT, USA
(% DIFFERENCE WITH BASE SCENARIO AT THE MEAN)

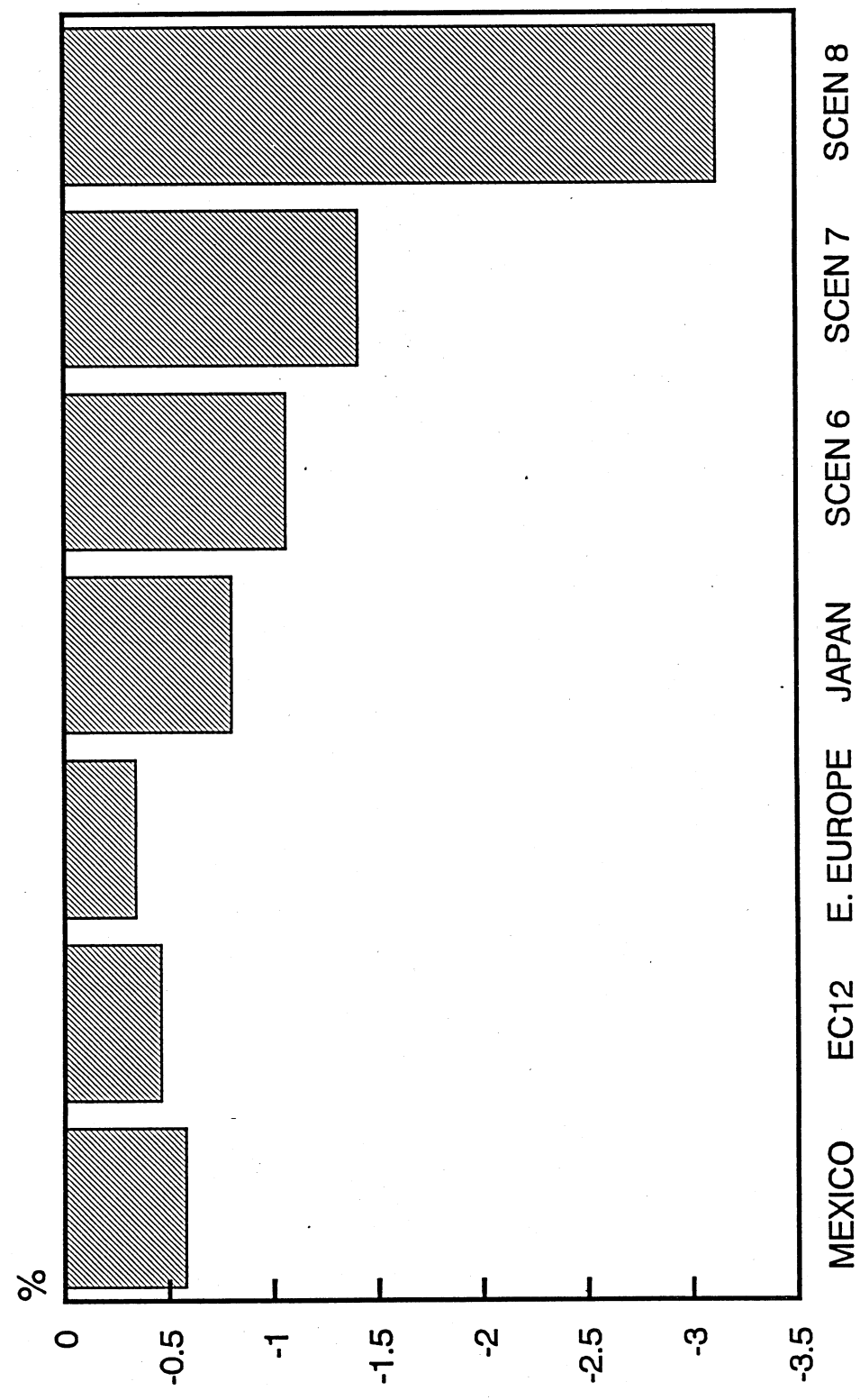
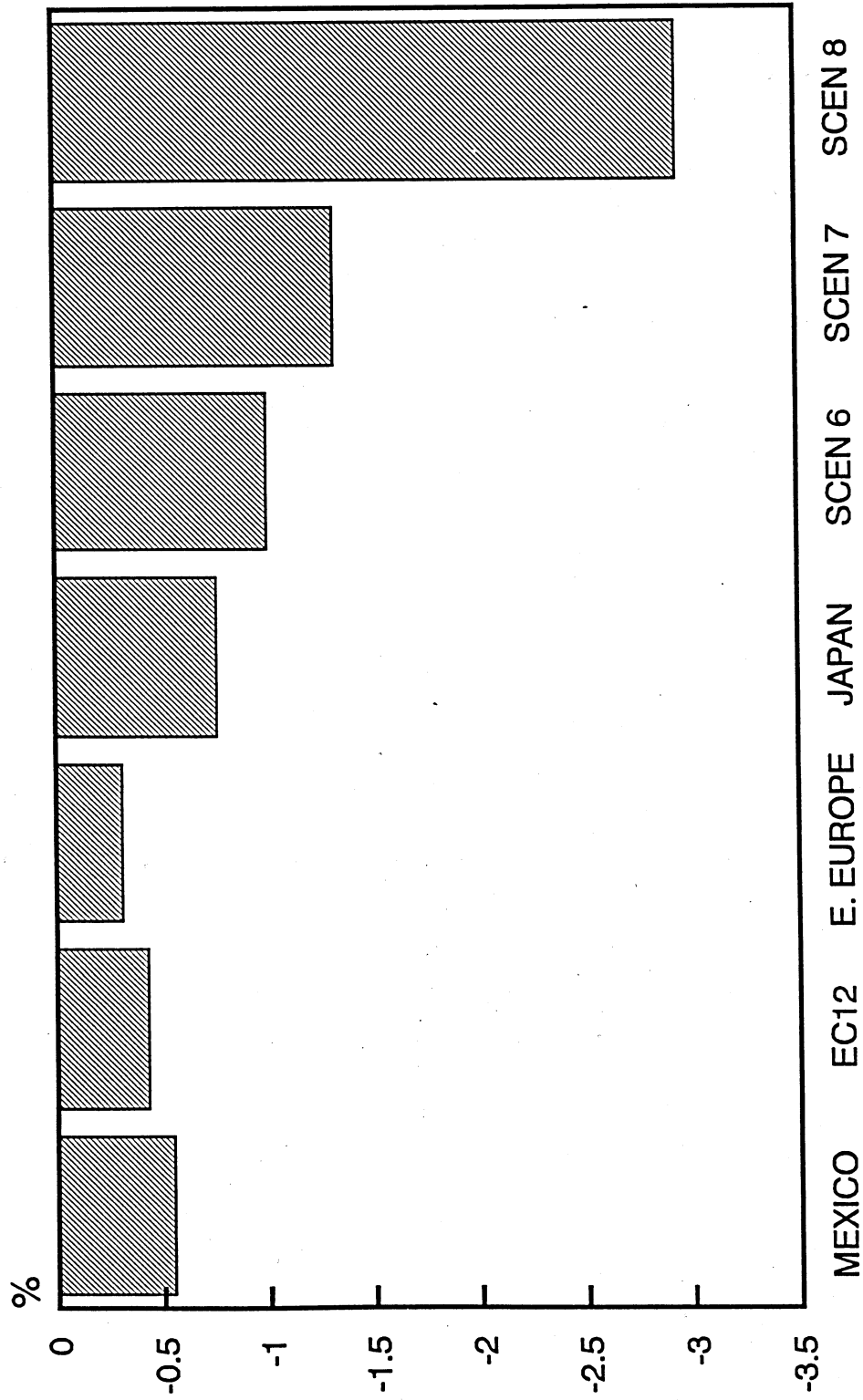


FIGURE 8: PRODUCER PRICE OF PIGMEAT, CANADA
(% DIFFERENCE WITH BASE SCENARIO AT THE MEAN)



APPENDIX 1

TABLE 1 DEMAND ELASTICITIES

Real farm price		Beef	Pork	Poultry	Fish	Income
Australia						
Beef	-0.38	0.03	-0.04	N/A		0.31
Pork	0.14	-0.56	0.19	N/A		0.26
Canada						
Beef	-0.18	0.10	0.07	N/A		0.55
Pork	0.12	-0.28	0.09	N/A		0.07
Hong Kong						
Beef	-0.09	N/A	N/A	N/A		0.37
Japan						
Beef	-0.56	0.09	-0.01	-0.21		1.27
Pork	0.18	-0.36	-0.14	0.13		0.21
Mexico						
Beef	-0.60	0.20	0.10	N/A		0.65
Pork	0.30	-0.70	N/A	N/A		0.80
New Zealand						
Beef	-0.21	N/A	N/A	(Sheep) 0.27		0.56
Pork	N/A	-0.16	N/A	N/A		0.41
Singapore						
Beef	-0.20	N/A	N/A	N/A		0.48
South Korea						
Beef	-0.37	0.03	0.03	0.26		1.09
Pork	0.07	-0.72	0.07	0.63		1.10
Taiwan						
Beef	-0.44	0.06	0.05	0.05		0.73
Pork	0.03	-0.53	0.23	0.23		0.50
United States						
Beef	-0.46	0.05	0.20	N/A		0.93
Pork	0.36	-0.50	0.04	N/A		0.35

Source: FAPRI model, ABARE EMABA model, Agriculture Canada FARM model, FAO agriculture model

TABLE 2 SUPPLY ELASTICITIES

	Own price			Feed price		
	ST	5Y	10Y	ST	5Y	10Y
Australia						
Beef*	-0.14	0.06	0.53	0	0	0
Pork	0.05	0.28	0.47	-0.05	-0.27	-0.45
Canada						
Beef*	-0.04	0.17	0.55	-0.04	-0.10	-0.54
Pork#	0.03	0.35	0.80	-0.05	-0.30	-0.54
Japan						
Beef*	0.025	0.024	0.020	-0.15	-0.05	-0.04
Pork	0.14	0.46	0.75	-0.25	-0.51	-0.73
Mexico						
Beef	-0.08	0.32	0.36	-0.04	-0.10	-0.10
Pork	0.34	0.74	0.86	-0.22	-0.52	-0.54
New Zealand						
Beef*	0.06	0.34	0.61	0	0	0
Pork	0.09	0.33	0.65	-0.05	-0.14	-0.32
South Korea						
Beef	-0.09	0.61	1.02	0	0	0
Pork	0.36	0.79	0.85	-0.23	-0.44	-0.47
Taiwan						
Pork	0.45	0.86	0.94	-0.28	-0.44	-0.47
United States						
Beef*	0.02	0.36	0.89	-0.10	-0.38	-0.75
Pork	0.22	0.83	1.22	-0.33	-0.88	-1.11
Pork 1st year	-0.01					

Supply cross-price elasticities

	Wool price			Milk price		
	ST	5Y	10Y	ST	5Y	10Y
Beef*						
Australia	0.06	-0.01	-0.27	0	0	0
New Zealand	-0.02	-0.08	-0.17	0.05	0.25	0.44

* Taking into account the impact on the inventory of dairy cows.

Calculated with an endogenous NTSP support price.

ST= short term, for pork it is the second year , 5Y= after 5 years and 10Y= after 10 years

Source: FAPRI model, ABARE EMABA model, Agriculture Canada FARM model, FAO agriculture model

APPENDIX 2

TABLE 1 MACROECONOMIC VARIABLES: HISTORICAL AND FORECAST

	Average real GDP growth 1988-97 %	Average inflation rate 1988-97 %	Nat. curr. appreciation 1988-97 vs 1980-87 %
Australia	2.9	4.9	-10
Canada	2.3	3.7	6
Hong Kong	5.1	7.0	-13
Japan	4.2	2.1	40
Mexico	3.6	28	-878
New Zealand	0.9	3.3	-13
Singapore	7.6	2.6	18
South Korea	7.2	6.9	5
Taiwan	6.5	3.2	33
USA	2.4	4.2	N/A

Source: OECD, unpublished data from 1993 Monitoring and Outlook report.

TABLE 2

EXPORT OF PIGMEAT (INCL. ANIMALS), CANADA (000 TONNES)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	385.01	365.49	364.00	335.49	336.78	286.16	243.86	259.20	270.44	295.34	314.18
2. MEXICO	381.93	362.96	363.51	333.47	331.10	282.19	241.50	257.11	265.94	289.37	310.91
Diff.	-3.08	-2.53	-0.50	-2.02	-5.68	-3.96	-2.36	-2.09	-4.50	-5.97	-3.27
	-0.80%	-0.69%	-0.14%	-0.60%	-1.69%	-1.39%	-0.97%	-0.81%	-1.66%	-2.02%	-1.04%
3. EC12	385.01	360.71	362.38	334.77	333.16	282.15	239.86	254.75	266.29	291.29	311.04
Diff.	0.00	-4.78	-1.62	-0.72	-3.62	-4.00	-4.00	-4.46	-4.14	-4.05	-3.14
	0.00%	-1.31%	-0.45%	-0.21%	-1.07%	-1.40%	-1.64%	-1.72%	-1.53%	-1.37%	-1.00%
4. E. EUROPE	385.01	365.49	361.79	332.45	334.03	282.98	240.53	255.74	266.53	291.35	311.59
Diff.	0.00	0.00	-2.21	-3.04	-2.75	-3.18	-3.33	-3.46	-3.91	-3.99	-2.59
	0.00%	0.00%	-0.61%	-0.91%	-0.82%	-1.11%	-1.37%	-1.34%	-1.44%	-1.35%	-0.82%
5. JAPAN	381.54	362.14	362.53	335.63	331.45	280.81	237.43	253.19	262.85	285.77	309.33
Diff.	-3.47	-3.35	-1.48	0.14	-5.32	-5.34	-6.43	-6.01	-7.59	-9.57	-4.84
	-0.90%	-0.92%	-0.41%	0.04%	-1.58%	-1.87%	-2.64%	-2.32%	-2.81%	-3.24%	-1.54%
6. SCEN 2 & 3	381.93	357.94	361.70	332.67	327.29	277.94	237.27	252.44	261.59	285.14	307.59
Diff.	-3.08	-7.55	-2.30	-2.83	-9.48	-8.22	-6.59	-6.76	-8.85	-10.20	-6.59
	-0.80%	-2.07%	-0.63%	-0.84%	-2.82%	-2.87%	-2.70%	-2.61%	-3.27%	-3.45%	-2.10%
7. SCEN 6 & 4	381.93	357.94	359.34	329.43	324.42	274.64	233.82	248.86	257.54	281.01	304.89
Diff.	-3.08	-7.55	-4.66	-6.06	-12.36	-11.52	-10.04	-10.34	-12.90	-14.33	-9.28
	-0.80%	-2.07%	-1.28%	-1.81%	-3.67%	-4.02%	-4.12%	-3.99%	-4.77%	-4.85%	-2.95%
8. SCEN 7 & 5	376.75	352.44	354.53	325.37	313.01	262.26	220.14	234.97	240.63	261.16	294.13
Diff.	-8.26	-13.05	-9.47	-10.12	-23.77	-23.90	-23.72	-24.23	-29.81	-34.18	-20.05
	-2.14%	-3.57%	-2.60%	-3.02%	-7.06%	-8.35%	-9.73%	-9.35%	-11.02%	-11.57%	-6.38%

TABLE 3

PRODUCER PRICE OF PIGMEAT, CANADA (C\$ / 100 KG)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	141.71	140.59	167.19	151.92	141.39	142.83	150.37	145.65	146.32	146.88	147.49
2. MEXICO	140.19	139.32	167.12	151.24	139.27	141.79	150.80	145.86	145.58	145.57	146.67
Diff.	-1.52	-1.27	-0.07	-0.68	-2.12	-1.05	0.43	0.20	-0.74	-1.31	-0.81
	-1.08%	-0.90%	-0.04%	-0.45%	-1.50%	-0.73%	0.29%	0.14%	-0.51%	-0.89%	-0.55%
3. EC12	141.71	137.64	165.86	152.81	140.87	142.24	150.01	145.05	145.88	146.41	146.85
Diff.	0.00	-2.95	-1.33	0.89	-0.51	-0.60	-0.36	-0.60	-0.44	-0.48	-0.64
	0.00%	-2.10%	-0.79%	0.59%	-0.36%	-0.42%	-0.24%	-0.41%	-0.30%	-0.32%	-0.43%
4. E. EUROPE	141.71	140.59	165.43	151.18	141.14	142.54	149.95	145.27	145.94	146.47	147.02
Diff.	0.00	0.00	-1.76	-0.74	-0.25	-0.29	-0.42	-0.38	-0.38	-0.41	-0.46
	0.00%	0.00%	-1.05%	-0.49%	-0.17%	-0.21%	-0.28%	-0.26%	-0.26%	-0.28%	-0.31%
5. JAPAN	139.64	138.70	166.83	153.10	139.58	141.14	149.22	145.47	145.33	144.57	146.36
Diff.	-2.07	-1.88	-0.36	1.17	-1.81	-1.69	-1.15	-0.18	-0.99	-2.32	-1.13
	-1.46%	-1.34%	-0.22%	0.77%	-1.28%	-1.18%	-0.76%	-0.12%	-0.68%	-1.58%	-0.76%
6. SCEN 2 & 3	140.19	136.30	165.66	152.16	138.77	141.17	150.42	145.25	145.13	145.09	146.01
Diff.	-1.52	-4.29	-1.53	0.24	-2.61	-1.66	0.05	-0.40	-1.19	-1.79	-1.47
	-1.08%	-3.05%	-0.91%	0.16%	-1.85%	-1.16%	0.03%	-0.28%	-0.81%	-1.22%	-1.00%
7. SCEN 6 & 4	140.19	136.3	163.83	151.36	138.51	140.88	149.99	144.86	144.75	144.68	145.54
Diff.	-1.52	-4.29	-3.36	-0.56	-2.88	-1.95	-0.38	-0.79	-1.57	-2.20	-1.95
	-1.07%	-3.05%	-2.01%	-0.37%	-2.03%	-1.37%	-0.25%	-0.54%	-1.07%	-1.50%	-1.32%
8. SCEN 7 & 5	137.17	133.31	161.27	151.71	135.5	137.79	147.97	143.74	142.38	140.61	143.15
Diff.	-4.54	-7.28	-5.92	-0.21	-5.89	-5.04	-2.40	-1.91	-3.94	-6.27	-4.34
	-3.20%	-5.18%	-3.54%	-0.14%	-4.16%	-3.53%	-1.60%	-1.31%	-2.69%	-4.27%	-2.94%

TABLE 4
IMPORTS OF PIGMEAT, JAPAN (000 TONNES)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	483.97	523.03	488.04	526.96	559.15	566.58	563.74	569.16	576.55	594.30	545.15
2. MEXICO	487.83	527.96	490.38	531.13	569.03	573.48	565.90	571.48	581.78	602.02	550.10
Diff.	3.86	4.93	2.33	4.17	9.88	6.90	2.16	2.31	5.22	7.72	4.95
	0.80%	0.94%	0.48%	0.79%	1.77%	1.22%	0.38%	0.41%	0.91%	1.30%	0.91%
3. EC12	483.97	531.76	494.70	528.32	562.86	570.59	567.30	573.27	580.41	598.19	549.14
Diff.	0.00	8.73	6.66	1.35	3.72	4.01	3.56	4.11	3.86	3.90	3.99
	0.00%	1.67%	1.36%	0.26%	0.66%	0.71%	0.63%	0.72%	0.67%	0.66%	0.73%
4. E. EUROPE	483.97	523.03	493.39	530.41	561.84	569.34	566.75	572.19	579.61	597.43	547.80
Diff.	0.00	0.00	5.35	3.45	2.69	2.76	3.01	3.03	3.06	3.13	2.65
	0.00%	0.00%	1.10%	0.65%	0.48%	0.49%	0.53%	0.53%	0.53%	0.53%	0.49%
5. JAPAN	372.01	369.62	327.83	371.51	345.13	325.91	312.91	280.73	262.10	255.57	322.33
Diff.	-111.96	-153.40	-160.22	-155.45	-214.01	-240.68	-250.83	-288.44	-314.45	-338.72	-222.82
	-23.13%	-29.33%	-32.83%	-29.50%	-38.28%	-42.48%	-44.49%	-50.68%	-54.54%	-57.00%	-40.87%
6. SCEN 2 & 3	487.83	536.95	497.52	532.53	572.84	577.65	569.61	575.72	585.74	606.01	554.24
Diff.	3.86	13.92	9.47	5.56	13.69	11.07	5.86	6.55	9.19	11.71	9.09
	0.80%	2.66%	1.94%	1.06%	2.45%	1.95%	1.04%	1.15%	1.59%	1.97%	1.67%
7. SCEN 6 & 4	487.83	536.95	503.12	536.24	575.67	580.5	572.73	578.85	588.88	609.22	557.00
Diff.	3.86	13.92	15.08	9.28	16.52	13.92	8.99	9.69	12.33	14.92	11.85
	0.80%	2.66%	3.09%	1.76%	2.96%	2.46%	1.59%	1.70%	2.14%	2.51%	2.17%
8. SCEN 7 & 5	372.01	369.62	327.83	372.08	346.88	326.28	312.23	280.37	262.72	256.93	322.70
Diff.	-111.96	-153.41	-160.21	-154.88	-212.27	-240.30	-251.51	-288.79	-313.83	-337.37	-222.45
	-23.13%	-29.33%	-32.83%	-29.39%	-37.96%	-42.41%	-44.61%	-50.74%	-54.43%	-56.77%	-40.81%

TABLE 5
 PRODUCER PRICE OF PIGMEAT, JAPAN (000 Y / 100KG)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	41.70	40.90	42.00	43.07	40.34	40.16	40.86	39.76	39.47	39.16	40.74
2. MEXICO	41.48	40.69	41.99	42.96	40.02	40.00	40.92	39.79	39.36	38.98	40.62
Diff.	-0.22	-0.20	-0.01	-0.11	-0.32	-0.16	0.06	0.03	-0.10	-0.18	-0.12
	-0.52%	-0.50%	-0.03%	-0.25%	-0.79%	-0.39%	0.15%	0.07%	-0.26%	-0.46%	-0.30%
3. EC12	41.70	40.43	41.77	43.21	40.27	40.07	40.81	39.68	39.41	39.10	40.64
Diff.	0.00	-0.47	-0.23	0.14	-0.08	-0.09	-0.05	-0.09	-0.06	-0.07	-0.10
	0.00%	-1.15%	-0.54%	0.33%	-0.19%	-0.22%	-0.13%	-0.21%	-0.16%	-0.17%	-0.24%
4. E. EUROPE	41.7	40.9	41.7	42.95	40.31	40.12	40.8	39.71	39.41	39.11	40.67
Diff.	0.00	0.00	-0.30	-0.12	-0.03	-0.04	-0.06	-0.05	-0.06	-0.05	-0.07
	0.00%	0.00%	-0.71%	-0.28%	-0.09%	-0.10%	-0.15%	-0.14%	-0.15%	-0.13%	-0.18%
5. JAPAN	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30
Diff.	5.60	6.40	5.30	4.23	6.96	7.14	6.44	7.54	7.83	8.14	6.56
	13.42%	15.65%	12.63%	9.82%	17.24%	17.78%	15.76%	18.95%	19.84%	20.78%	16.09%
6. SCEN 2 & 3	41.48	40.21	41.74	43.11	39.95	39.91	40.87	39.71	39.30	38.92	40.52
Diff.	-0.22	-0.69	-0.26	0.04	-0.39	-0.25	0.01	-0.06	-0.17	-0.24	-0.22
	-0.52%	-1.68%	-0.62%	0.09%	-0.98%	-0.61%	0.02%	-0.14%	-0.42%	-0.62%	-0.55%
7. SCEN 6 & 4	41.48	40.21	41.43	42.98	39.91	39.87	40.81	39.65	39.25	38.86	40.45
Diff.	-0.22	-0.69	-0.57	-0.09	-0.43	-0.29	-0.05	-0.11	-0.22	-0.30	-0.30
	-0.53%	-1.68%	-1.35%	-0.21%	-1.08%	-0.72%	-0.13%	-0.29%	-0.55%	-0.77%	-0.73%
8. SCEN 7 & 5	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.30
Diff.	5.60	6.40	5.30	4.23	6.96	7.14	6.44	7.54	7.83	8.14	6.56
	13.42%	15.65%	12.63%	9.82%	17.24%	17.78%	15.76%	18.95%	19.84%	20.78%	16.09%

TABLE 6

NET EXPORTS OF PIGMEAT (INCL. ANIMALS), MEXICO (000 TONNES)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	-80.01	-87.39	-44.99	-77.69	-156.28	-123.77	-67.55	-59.57	-86.58	-118.87	-90.27
2. MEXICO	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
Diff.	78.01	85.39	42.99	75.69	154.28	121.77	65.55	57.57	84.58	116.87	88.27
	97.50%	97.71%	95.55%	97.43%	98.72%	98.38%	97.04%	96.64%	97.69%	98.32%	97.78%
3. EC12	-80.01	-93.86	-50.94	-79.25	-159.14	-126.43	-69.57	-61.61	-88.34	-120.42	-92.96
Diff.	0.00	-6.48	-5.95	-1.56	-2.86	-2.66	-2.02	-2.04	-1.76	-1.55	-2.69
	0.00%	-7.41%	-13.22%	-2.01%	-1.83%	-2.15%	-2.99%	-3.43%	-2.03%	-1.31%	-2.98%
4. E. EUROPE	-80.01	-87.39	-48.73	-81.22	-158.91	-125.89	-69.43	-61.22	-88.06	-120.19	-92.11
Diff.	0.00	0.00	-3.74	-3.53	-2.63	-2.12	-1.88	-1.65	-1.48	-1.32	-1.84
	0.00%	0.00%	-8.31%	-4.54%	-1.69%	-1.72%	-2.79%	-2.77%	-1.71%	-1.11%	-2.03%
5. JAPAN	-86.17	-94.65	-50.07	-78.38	-162.27	-129.80	-72.42	-62.91	-90.11	-123.60	-95.04
Diff.	-6.16	-7.26	-5.08	-0.69	-6.00	-6.03	-4.87	-3.34	-3.53	-4.73	-4.77
	-7.70%	-8.31%	-11.29%	-0.89%	-3.84%	-4.87%	-7.21%	-5.61%	-4.08%	-3.98%	-5.28%
6. SCEN 2 & 3	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
Diff.	78.01	85.39	42.99	75.69	154.28	121.77	65.55	57.57	84.58	116.87	88.27
	97.50%	97.71%	95.55%	97.43%	98.72%	98.38%	97.04%	96.64%	97.69%	98.32%	97.78%
7. SCEN 6 & 4	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
Diff.	78.01	85.39	42.99	75.69	154.28	121.77	65.55	57.57	84.58	116.87	88.27
	97.50%	97.71%	95.55%	97.43%	98.72%	98.38%	97.04%	96.64%	97.69%	98.32%	97.78%
8. SCEN 7 & 5	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
Diff.	78.01	85.39	42.99	75.69	154.28	121.77	65.55	57.57	84.58	116.87	88.27
	97.50%	97.71%	95.55%	97.43%	98.72%	98.38%	97.04%	96.64%	97.69%	98.32%	97.78%

TABLE 7

PRODUCER PRICE OF PIGMEAT, MEXICO (000 P / 100KG)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	522.93	689.97	849.96	875.11	884.70	1,094.14	1,373.82	1,555.01	1,691.61	1,917.28	1,145.45
2. MEXICO	601.07	756.48	840.95	941.85	1,063.46	1,187.25	1,367.07	1,588.12	1,835.73	2,170.03	1,235.20
Diff.	78.14	66.51	-9.02	66.73	178.76	93.10	-6.75	33.11	144.12	252.75	89.75
	14.94%	9.64%	-1.06%	7.63%	20.21%	8.51%	-0.49%	2.13%	8.52%	13.18%	7.84%
3. EC12	522.93	681.18	845.38	878.45	882.84	1,091.98	1,372.50	1,552.83	1,689.96	1,915.48	1,143.35
Diff.	0.00	-8.79	-4.58	3.34	-1.86	-2.17	-1.32	-2.18	-1.65	-1.81	-2.10
	0.00%	-1.27%	-0.54%	0.38%	-0.21%	-0.20%	-0.10%	-0.14%	-0.10%	-0.09%	-0.18%
4. E. EUROPE	522.93	689.97	843.9	872.35	883.8	1,093.08	1,372.32	1,553.63	1,690.19	1,915.70	1,143.79
Diff.	0.00	0.00	-6.06	-2.76	-0.90	-1.06	-1.50	-1.38	-1.42	-1.58	-1.67
	0.00%	0.00%	-0.71%	-0.32%	-0.10%	-0.10%	-0.11%	-0.09%	-0.08%	-0.08%	-0.15%
5. JAPAN	517.45	684.35	848.72	879.50	878.15	1,088.02	1,369.67	1,554.35	1,687.94	1,908.51	1,141.67
Diff.	-5.47	-5.62	-1.24	4.39	-6.55	-6.12	-4.16	-0.66	-3.67	-8.77	-3.79
	-1.05%	-0.81%	-0.15%	0.50%	-0.74%	-0.56%	-0.30%	-0.04%	-0.22%	-0.46%	-0.33%
6. SCEN 2 & 3	601.07	755.64	841.10	942.62	1,063.35	1,187.16	1,367.11	1,588.03	1,835.74	2,170.02	1,235.18
Diff.	78.14	65.67	-8.86	67.51	178.65	93.02	-6.71	33.02	144.13	252.74	89.73
	14.94%	9.52%	-1.04%	7.71%	20.19%	8.50%	-0.49%	2.12%	8.52%	13.18%	7.83%
7. SCEN 6 & 4	601.07	755.64	840.62	942.69	1,063.55	1,187.23	1,367.11	1,588.03	1,835.73	2,169.99	1,235.17
Diff.	78.14	65.67	-9.34	67.58	178.85	93.09	-6.71	33.02	144.12	252.71	89.71
	14.94%	9.52%	-1.10%	7.72%	20.22%	8.51%	-0.49%	2.12%	8.52%	13.18%	7.83%
8. SCEN 7 & 5	600.87	755.67	840.87	943.39	1,063.38	1,187.25	1,367.36	1,588.70	1,835.83	2,169.67	1,235.30
Diff.	77.94	65.70	-9.09	68.28	178.68	93.11	-6.46	33.69	144.22	252.39	89.85
	14.91%	9.52%	-1.07%	7.80%	20.20%	8.51%	-0.47%	2.17%	8.53%	13.16%	7.84%

TABLE 8
NORTH PACIFIC MARKET NET EXPORTS OF PIGMEAT (1) (000 TONNES)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	-490.90	-448.30	-322.50	-263.90	-322.50	-340.34	-345.14	-336.00	-340.49	-340.54	-355.06
2. MEXICO	-490.90	-448.30	-322.50	-263.90	-322.50	-340.34	-345.14	-336.00	-340.49	-340.54	-355.06
Diff.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3. EC12	-490.90	-570.99	-416.04	-315.33	-398.11	-407.83	-407.83	-407.83	-407.83	-407.83	-423.05
Diff.	0.00	-122.69	-93.54	-51.43	-75.62	-67.49	-62.69	-71.83	-67.34	-67.29	-67.99
	0.00%	-27.37%	-29.00%	-19.49%	-23.45%	-19.83%	-18.16%	-21.38%	-19.78%	-19.76%	-19.15%
4. E. EUROPE	-490.9	-448.28	-378	-319.4	-378	-395.84	-400.64	-391.5	-395.99	-396.04	-399.46
Diff.	0.00	0.02	-55.50	-55.50	-55.50	-55.50	-55.50	-55.50	-55.50	-55.50	-44.40
	0.00%	0.00%	-17.21%	-21.03%	-17.21%	-16.31%	-16.08%	-16.52%	-16.30%	-16.30%	-12.50%
5. JAPAN	-460.61	-403.42	-274.56	-216.70	-255.54	-264.13	-265.17	-243.20	-238.82	-230.63	-285.28
Diff.	30.29	44.88	47.94	47.20	66.96	76.22	79.97	92.80	101.68	109.92	69.79
	6.17%	10.01%	14.87%	17.89%	20.76%	22.39%	23.17%	27.62%	29.86%	32.28%	19.65%
6. SCEN 2 & 3	-490.90	-570.99	-416.04	-315.33	-398.11	-407.83	-407.83	-407.83	-407.83	-407.83	-423.05
Diff.	0.00	-122.69	-93.54	-51.43	-75.62	-67.49	-62.69	-71.83	-67.34	-67.29	-67.99
	0.00%	-27.37%	-29.00%	-19.49%	-23.45%	-19.83%	-18.16%	-21.38%	-19.78%	-19.76%	-19.15%
7. SCEN 6 & 4	-490.9	-570.99	-471.54	-370.83	-453.61	-463.33	-463.33	-463.33	-463.33	-463.33	-467.45
Diff.	0.00	-122.69	-149.04	-106.93	-131.11	-122.99	-118.19	-127.33	-122.84	-122.79	-112.39
	0.00%	-27.37%	-46.21%	-40.52%	-40.66%	-36.14%	-34.24%	-37.90%	-36.08%	-36.06%	-31.65%
8. SCEN 7 & 5	-490.9	-570.99	-471.54	-370.83	-453.61	-463.33	-463.33	-463.33	-463.33	-463.33	-467.45
Diff.	0.00	-122.69	-149.04	-106.93	-131.11	-122.99	-118.19	-127.33	-122.84	-122.79	-112.39
	0.00%	-27.37%	-46.21%	-40.52%	-40.66%	-36.14%	-34.24%	-37.90%	-36.08%	-36.06%	-31.65%

1) These numbers correspond to the difference between total pork exports and imports of Canada, USA, Japan, Mexico, Taiwan and South Korea.

TABLE 9

EXPORTS OF PIGMEAT, TAIWAN (000 TONNES)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	178.03	160.00	209.95	269.53	224.20	230.21	221.46	242.46	234.94	213.66	218.44
2. MEXICO	172.79	150.56	203.31	263.73	212.13	215.97	213.57	239.95	231.26	205.08	210.83
Diff.	-5.24	-9.44	-6.64	-5.81	-12.08	-14.23	-7.89	-2.51	-3.68	-8.58	-7.61
	-2.95%	-5.90%	-3.16%	-2.15%	-5.39%	-6.18%	-3.56%	-1.04%	-1.57%	-4.02%	-3.48%
3. EC12	178.03	149.62	196.99	262.77	220.79	225.30	216.45	236.85	229.11	207.99	212.39
Diff.	0.00	-10.38	-12.96	-6.77	-3.41	-4.91	-5.01	-5.61	-5.83	-5.67	-6.05
	0.00%	-6.49%	-6.17%	-2.51%	-1.52%	-2.13%	-2.26%	-2.32%	-2.48%	-2.65%	-2.77%
4. E. EUROPE	178.03	160	205.57	261.76	217.79	225.41	217	237.83	230.34	208.97	214.27
Diff.	0.00	0.00	-4.38	-7.77	-6.41	-4.80	-4.46	-4.63	-4.60	-4.69	-4.17
	0.00%	0.00%	-2.08%	-2.88%	-2.86%	-2.08%	-2.01%	-1.91%	-1.96%	-2.20%	-1.91%
5. JAPAN	172.99	149.46	170.47	193.18	179.48	169.48	162.72	145.98	136.29	132.90	161.29
Diff.	-5.04	-10.54	-39.48	-76.36	-44.73	-60.73	-58.74	-96.48	-98.64	-80.76	-57.15
	-2.83%	-6.59%	-18.80%	-28.33%	-19.95%	-26.38%	-26.53%	-39.79%	-41.99%	-37.80%	-26.16%
6. SCEN 2 & 3	172.79	139.75	189.76	256.50	208.55	210.95	208.42	234.18	225.32	199.33	204.56
Diff.	-5.24	-20.25	-20.19	-13.03	-15.65	-19.25	-13.04	-8.29	-9.62	-14.33	-13.89
	-2.95%	-12.66%	-9.62%	-4.83%	-6.98%	-8.36%	-5.89%	-3.42%	-4.09%	-6.71%	-6.36%
7. SCEN 6 & 4	172.79	139.75	185.13	248.34	201.75	205.95	203.82	229.41	220.62	194.56	200.21
Diff.	-5.24	-20.25	-24.82	-21.19	-22.45	-24.26	-17.64	-13.05	-14.32	-19.10	-18.23
	-2.95%	-12.65%	-11.82%	-7.86%	-10.01%	-10.54%	-7.97%	-5.38%	-6.09%	-8.94%	-8.35%
8. SCEN 7 & 5	162.42	118.79	163.85	193.38	180.43	169.69	162.34	145.68	136.58	133.69	156.69
Diff.	-15.61	-41.21	-46.10	-76.15	-43.77	-60.52	-59.12	-96.78	-98.36	-79.97	-61.76
	-8.77%	-25.75%	-21.96%	-28.25%	-19.52%	-26.29%	-26.70%	-39.92%	-41.87%	-37.43%	-28.27%

TABLE 10

NET EXPORTS OF PIGMEAT (INCL. ANIMALS), USA (000 TONNES)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	-483.58	-361.95	-348.08	-254.17	-156.43	-136.49	-100.27	-100.85	-87.20	-49.25	-207.83
2. MEXICO	-545.83	-425.68	-379.39	-315.27	-277.52	-228.14	-152.17	-151.28	-156.52	-140.39	-277.22
Diff.	-62.25	-63.73	-31.31	-61.10	-121.08	-91.65	-51.90	-50.42	-69.32	-91.14	-69.39
	-12.87%	-17.61%	-9.00%	-24.04%	-77.40%	-67.14%	-51.76%	-50.00%	-79.50%	-185.05%	-33.39%
3. EC12	-483.58	-447.06	-408.47	-294.06	-216.74	-186.21	-146.44	-154.09	-136.98	-99.53	-257.32
Diff.	0.00	-85.10	-60.39	-39.90	-60.31	-49.72	-46.17	-53.24	-49.77	-50.27	-49.49
	0.00%	-23.51%	-17.35%	-15.70%	-38.55%	-36.43%	-46.05%	-52.79%	-57.08%	-102.08%	-23.81%
4. E. EUROPE	-483.58	-361.94	-384.38	-288.59	-195.32	-177.37	-141.2	-141.79	-128.04	-90.06	-239.23
Diff.	0.00	0.01	-36.30	-34.42	-38.89	-40.88	-40.93	-40.94	-40.84	-40.81	-31.40
	0.00%	0.00%	-10.43%	-13.54%	-24.86%	-29.95%	-40.82%	-40.59%	-46.83%	-82.86%	-15.11%
5. JAPAN	-545.87	-442.52	-410.53	-286.02	-244.03	-223.45	-195.76	-187.78	-186.67	-176.80	-289.94
Diff.	-62.29	-80.57	-62.45	-31.86	-87.60	-86.96	-95.49	-86.92	-99.47	-127.54	-82.11
	-12.88%	-22.26%	-17.94%	-12.53%	-56.00%	-63.71%	-95.24%	-86.19%	-114.07%	-258.97%	-39.51%
6. SCEN 2 & 3	-545.83	-516.05	-444.11	-356.04	-340.20	-279.94	-199.77	-205.99	-207.60	-191.84	-328.74
Diff.	-62.25	-154.09	-96.04	-101.87	-183.77	-143.44	-99.51	-105.14	-120.40	-142.59	-120.91
	-12.87%	-42.57%	-27.59%	-40.08%	-117.48%	-105.09%	-99.24%	-104.25%	-138.07%	-289.51%	-58.18%
7. SCEN 6 & 4	-545.83	-516.05	-483.32	-392.95	-380.95	-322.44	-242.17	-248.18	-249.56	-233.65	-361.51
Diff.	-62.25	-154.10	-135.24	-138.78	-224.52	-185.95	-141.90	-147.33	-162.36	-184.40	-153.68
	-12.87%	-42.57%	-38.85%	-54.60%	-143.52%	-136.23%	-141.52%	-146.08%	-186.19%	-374.41%	-73.95%
8. SCEN 7 & 5	-639.11	-646	-622.42	-493.87	-568.64	-516.94	-437.37	-441.57	-466.13	-493.14	-532.52
Diff.	-155.53	-284.05	-274.34	-239.70	-412.21	-380.45	-337.10	-340.72	-378.93	-443.89	-324.69
	-32.16%	-78.48%	-78.82%	-94.31%	-263.50%	-278.73%	-336.20%	-337.83%	-434.54%	-901.28%	-156.23%

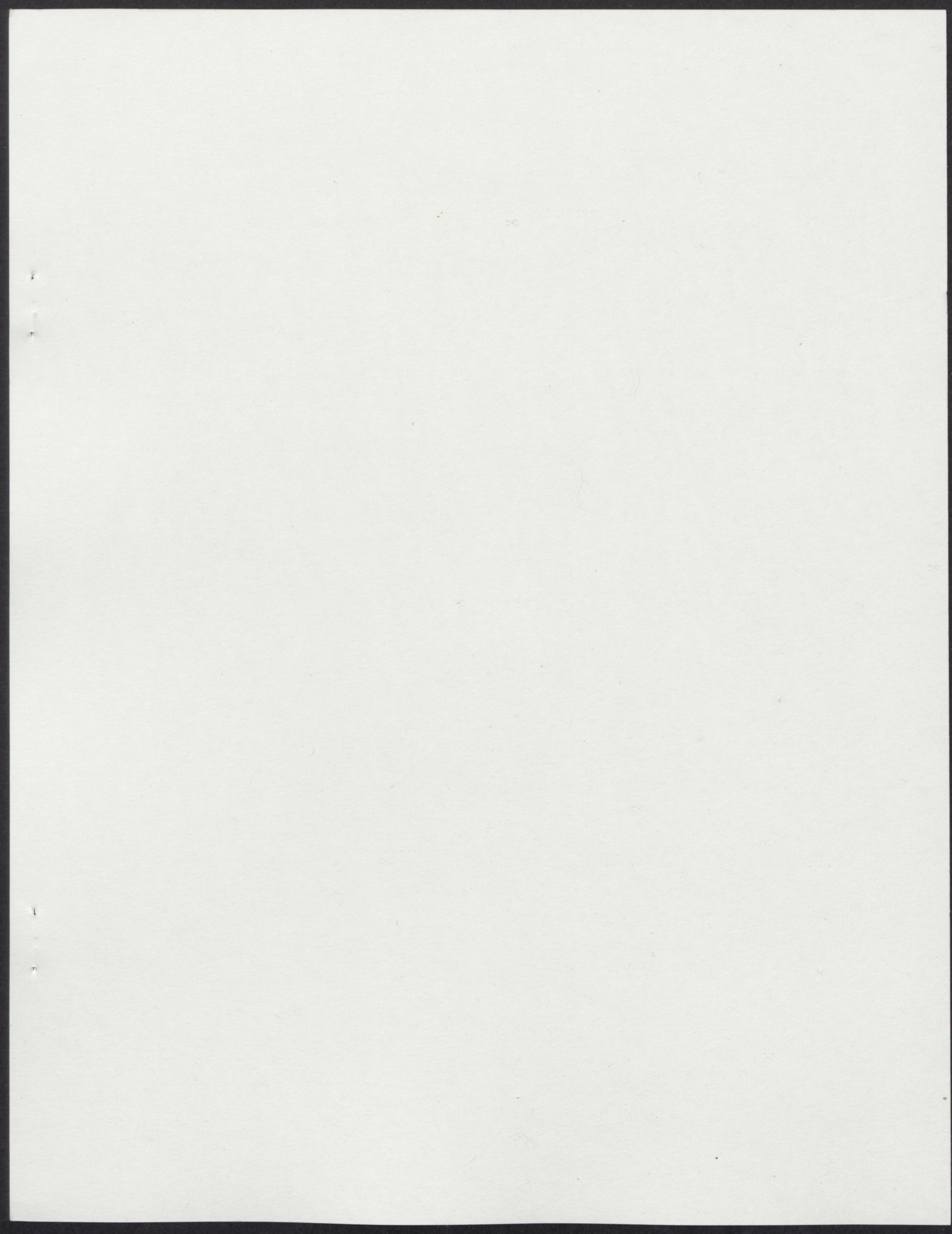
TABLE 11

PRODUCER PRICE OF PIGMEAT, USA (US \$/100 KG)

SCENARIOS	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	MEAN
1. BASE	128.61	129.59	162.69	147.35	132.38	133.84	141.39	136.59	137.26	137.83	138.75
2. MEXICO	127.13	128.31	162.61	146.65	130.27	132.79	141.82	136.79	136.52	136.52	137.94
Diff.	-1.48	-1.28	-0.07	-0.70	-2.11	-1.04	0.43	0.20	-0.74	-1.31	-0.81
	-1.15%	-0.99%	-0.04%	-0.48%	-1.59%	-0.78%	0.31%	0.15%	-0.54%	-0.95%	-0.58%
3. EC12	128.61	126.61	161.33	148.27	131.87	133.24	141.03	135.99	136.82	137.35	138.11
Diff.	0.00	-2.98	-1.36	0.92	-0.51	-0.60	-0.36	-0.60	-0.44	-0.47	-0.64
	0.00%	-2.30%	-0.83%	0.63%	-0.39%	-0.45%	-0.26%	-0.44%	-0.32%	-0.34%	-0.46%
4. E. EUROPE	128.61	129.59	160.89	146.59	132.14	133.54	140.98	136.21	136.88	137.41	138.28
Diff.	0.00	0.00	-1.80	-0.76	-0.24	-0.30	-0.41	-0.38	-0.38	-0.42	-0.47
	0.00%	0.00%	-1.10%	-0.52%	-0.18%	-0.22%	-0.29%	-0.28%	-0.28%	-0.30%	-0.34%
5. JAPAN	126.61	127.69	162.32	148.56	130.58	132.15	140.25	136.41	136.28	135.52	137.64
Diff.	-2.01	-1.90	-0.37	1.21	-1.80	-1.68	-1.14	-0.18	-0.98	-2.31	-1.12
	-1.56%	-1.47%	-0.23%	0.82%	-1.36%	-1.26%	-0.81%	-0.13%	-0.72%	-1.67%	-0.80%
6. SCEN 2 & 3	127.13	125.26	161.12	147.60	129.78	132.18	141.44	136.18	136.08	136.05	137.28
Diff.	-1.48	-4.33	-1.57	0.25	-2.60	-1.66	0.05	-0.40	-1.18	-1.78	-1.47
	-1.15%	-3.34%	-0.96%	0.17%	-1.97%	-1.24%	0.03%	-0.29%	-0.86%	-1.29%	-1.06%
7. SCEN 6 & 4	127.13	125.26	159.25	146.77	129.53	131.89	141.01	135.8	135.7	135.63	136.80
Diff.	-1.48	-4.33	-3.44	-0.58	-2.85	-1.95	-0.38	-0.79	-1.56	-2.20	-1.96
	-1.15%	-3.34%	-2.11%	-0.39%	-2.16%	-1.46%	-0.27%	-0.58%	-1.14%	-1.59%	-1.41%
8. SCEN 7 & 5	124.21	122.25	156.63	147.14	126.52	128.82	139	134.68	133.34	131.58	134.42
Diff.	-4.40	-7.34	-6.06	-0.21	-5.86	-5.02	-2.39	-1.91	-3.92	-6.25	-4.34
	-3.42%	-5.66%	-3.72%	-0.14%	-4.43%	-3.75%	-1.69%	-1.40%	-2.86%	-4.53%	-3.12%

REFERENCES

- 1) Sparks Companies Inc., United States hog and pork sector competitiveness review, Ottawa, 1993.
- 2) Pindyck, R. S. and Rubinfeld, D. L., "Econometric models and economic forecasts", McGraw-Hill, 1981.
- 3) Harris, D., Corra, G., Shaw, I. and Dewbre, J., "EMABA: Econometric model of Australian broadacre agriculture", Bureau of agricultural economics, Canberra, July 1986.
- 4) Cluff, M. and all, "FARM the food and agriculture regional model", Agriculture Canada (unpublished), May 1989.
- 5) Charlebois, P., "Modèle économétrique du boeuf", Agriculture Canada, March 1987.
- 6) OECD, "Agricultural policies, markets and trade: Monitoring and outlook", OECD, 1988 to 1993 issues.
- 7) OECD, "Politiques nationales et échanges agricoles: Étude sur la Communauté Économique Européenne", OECD, Paris 1987.
- 8) OECD, "Politiques nationales et échanges agricoles: Étude par pays États-Unis", OECD, Paris 1987.
- 9) OECD, "Politiques nationales et échanges agricoles: Étude par pays Australie", OECD, Paris 1987.
- 10) OECD, "Politiques nationales et échanges agricoles: Étude par pays Japon", OECD, Paris 1987.
- 11) OECD, "Politiques nationales et échanges agricoles: Étude par pays Nouvelle Zélande", OECD, Paris 1987.
- 12) Shagam, S. D., "The world pork market-Government intervention and multilateral policy reform", USDA ERS, April 1990.
- 13) Hahn, W., "The world beef market-Government intervention and multilateral policy reform", USDA ERS, April 1990.
- 14) ABARE, "Japanese agricultural policies", ABARE, October 1988.
- 15) ABARE, "Agricultural policies in the EC: Their origins, nature and effects on production and trade", ABARE, August 1985.
- 16) FAO, "World food model", FAO, 1986.
- 17) OCDE, Bilans de la viande dans les pays de l'OCDE, OCDE, Paris 1992.
- 18) Agra Europe, Feb.7, May 1, Aug. 14, Nov 27 1992 issues.
- 19) USDA, Livestock and poultry situation and outlook, Washington, 1988 to 1993.
- 20) USDA, "Pacific Rim" RS92-2, Washington, September 1992.
- 21) USDA, "Pacific Rim" RS90-2, Washington, July 1990.



W. 2000

10/10/10